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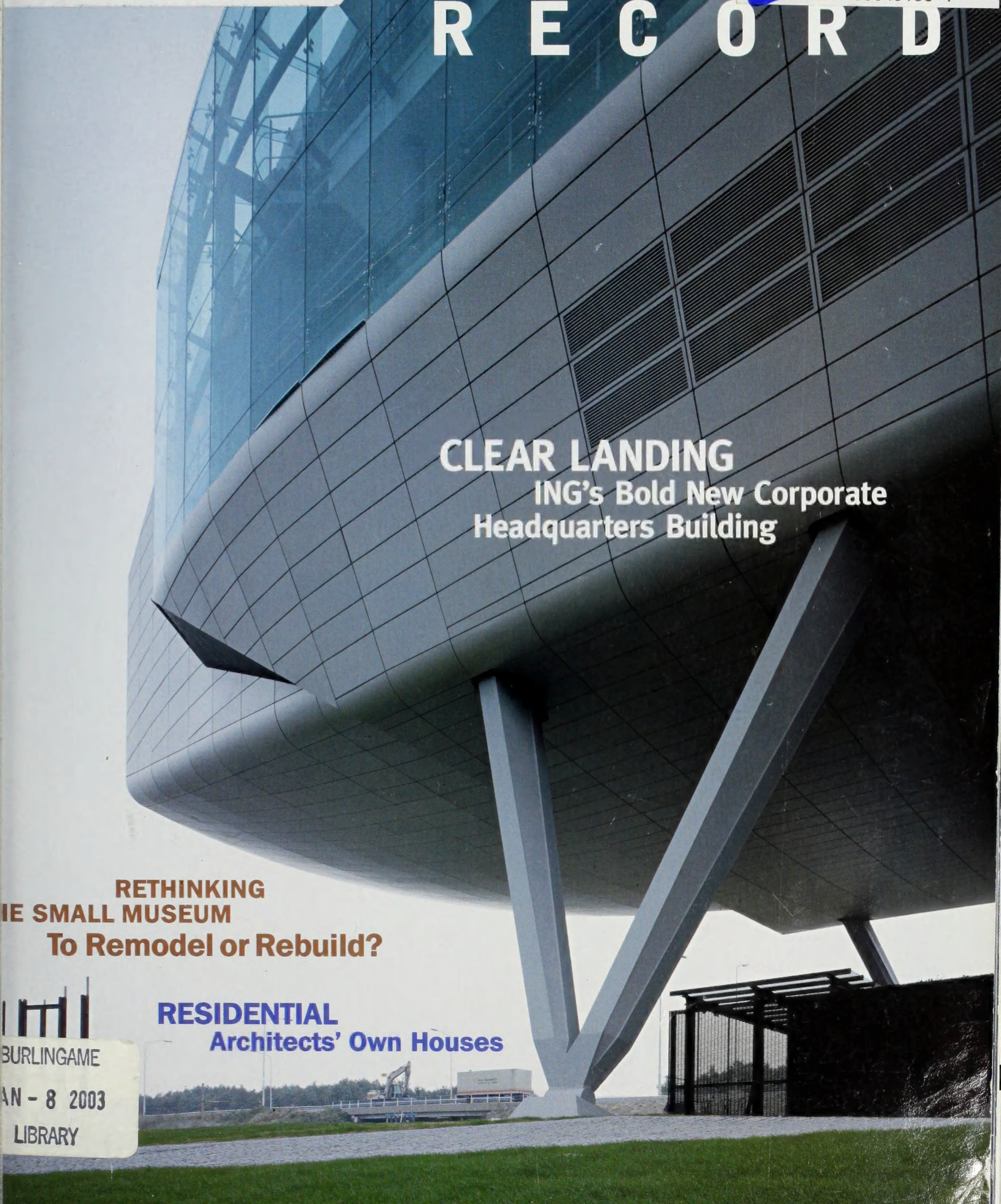

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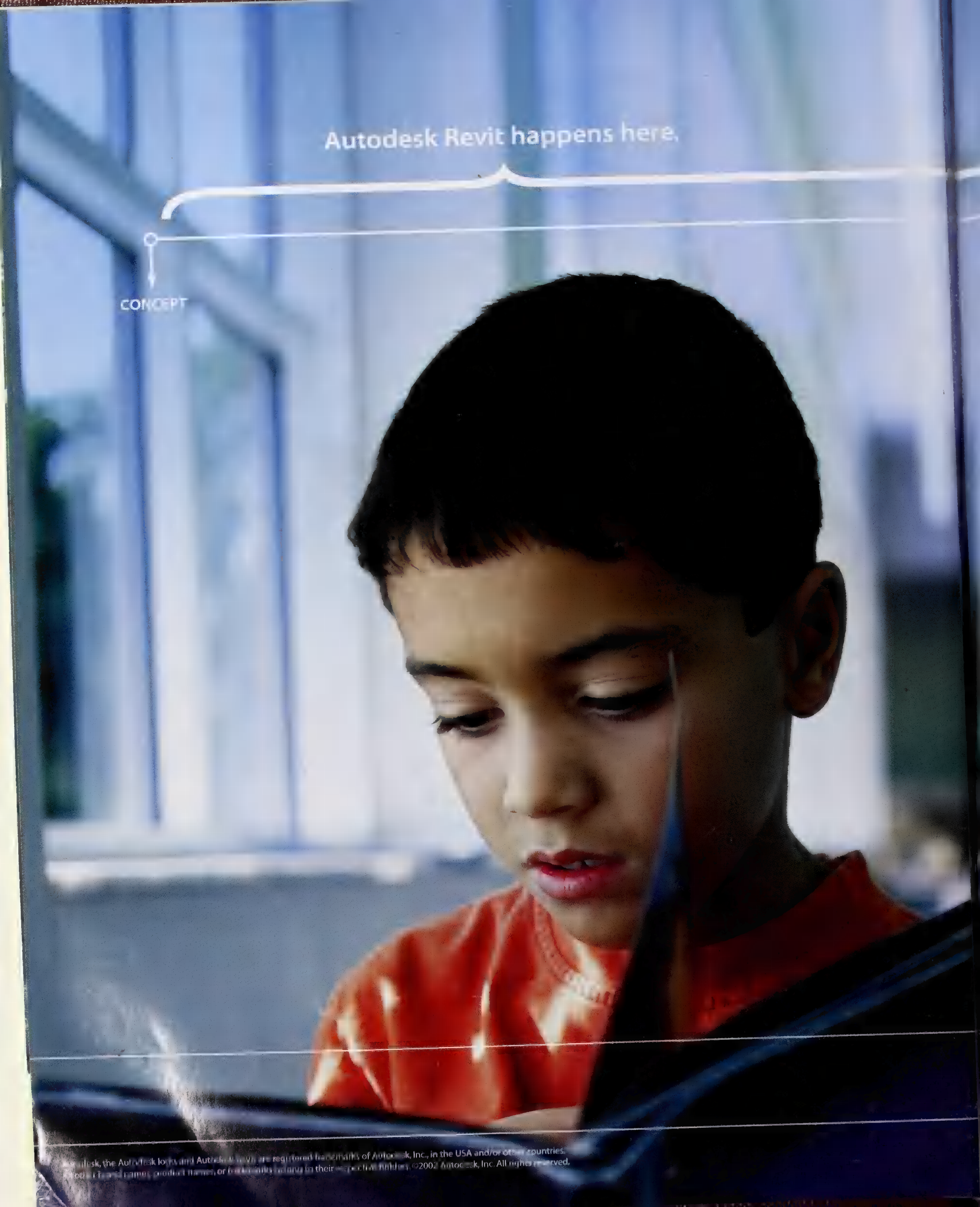

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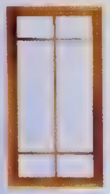

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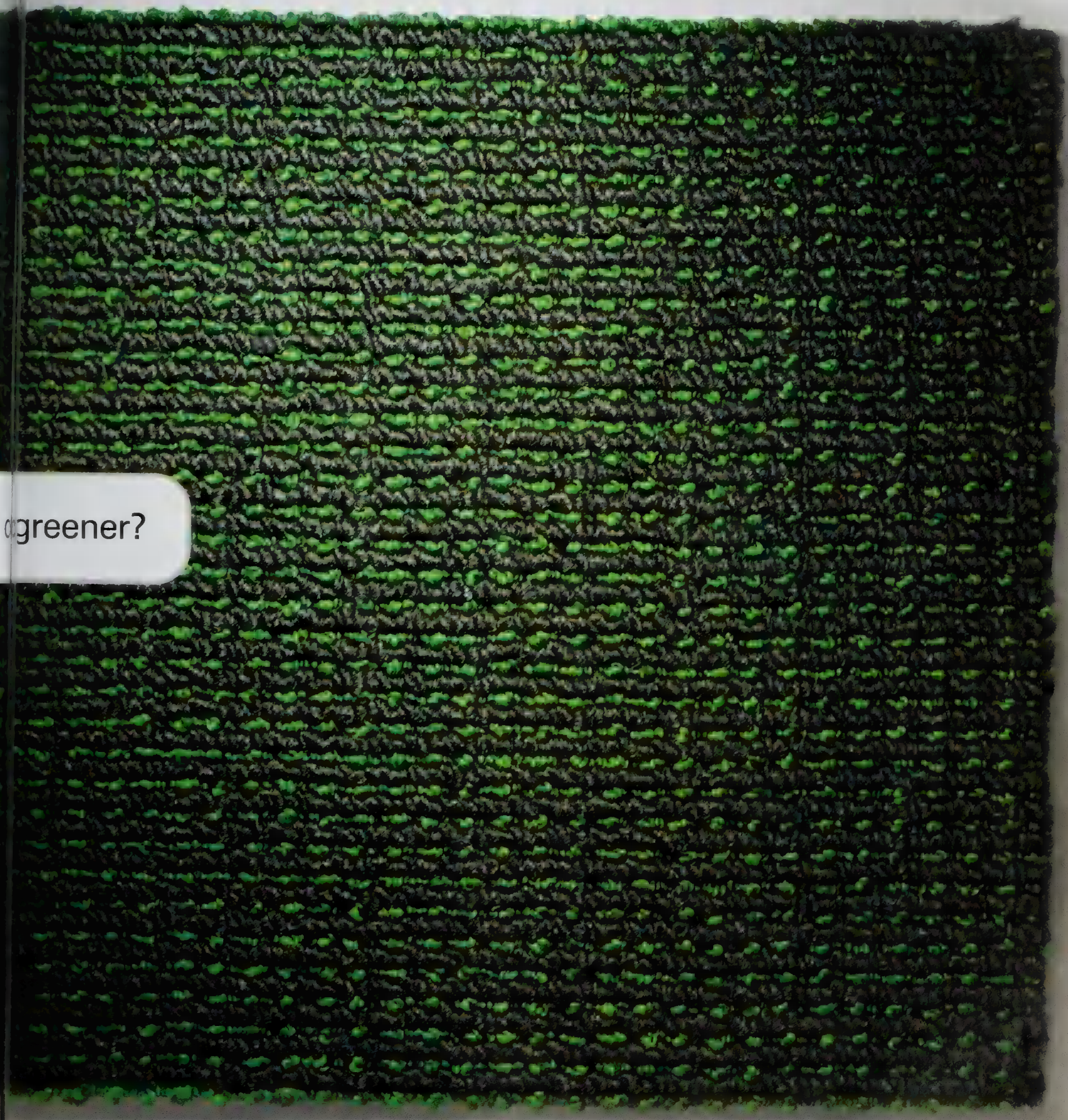

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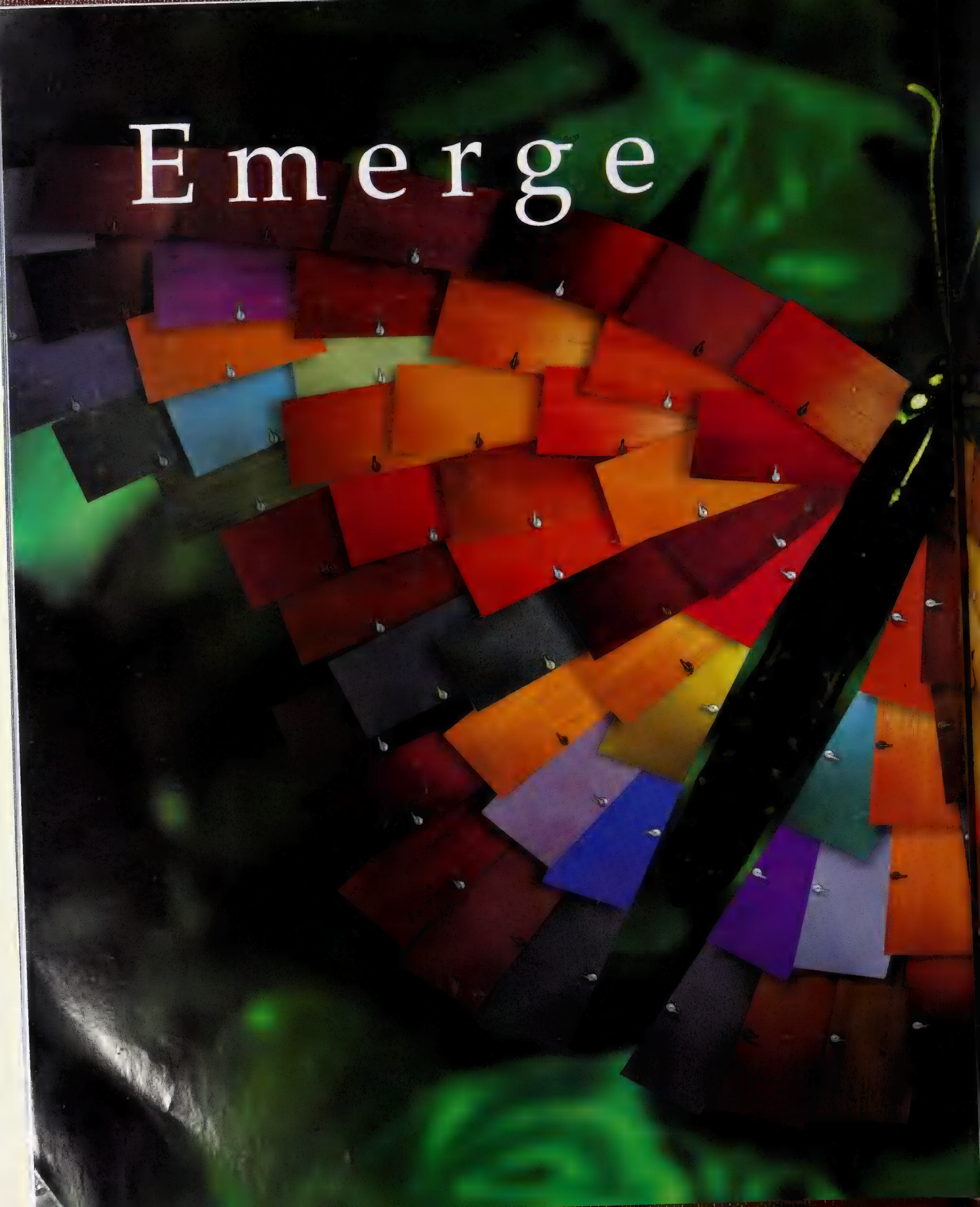

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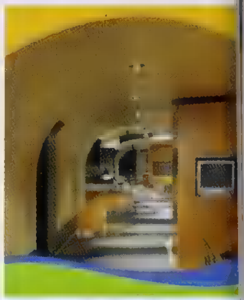

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On the Cover: *ING House, by Meyer en Van Schooten Architecten. Photograph by Christian Richters*
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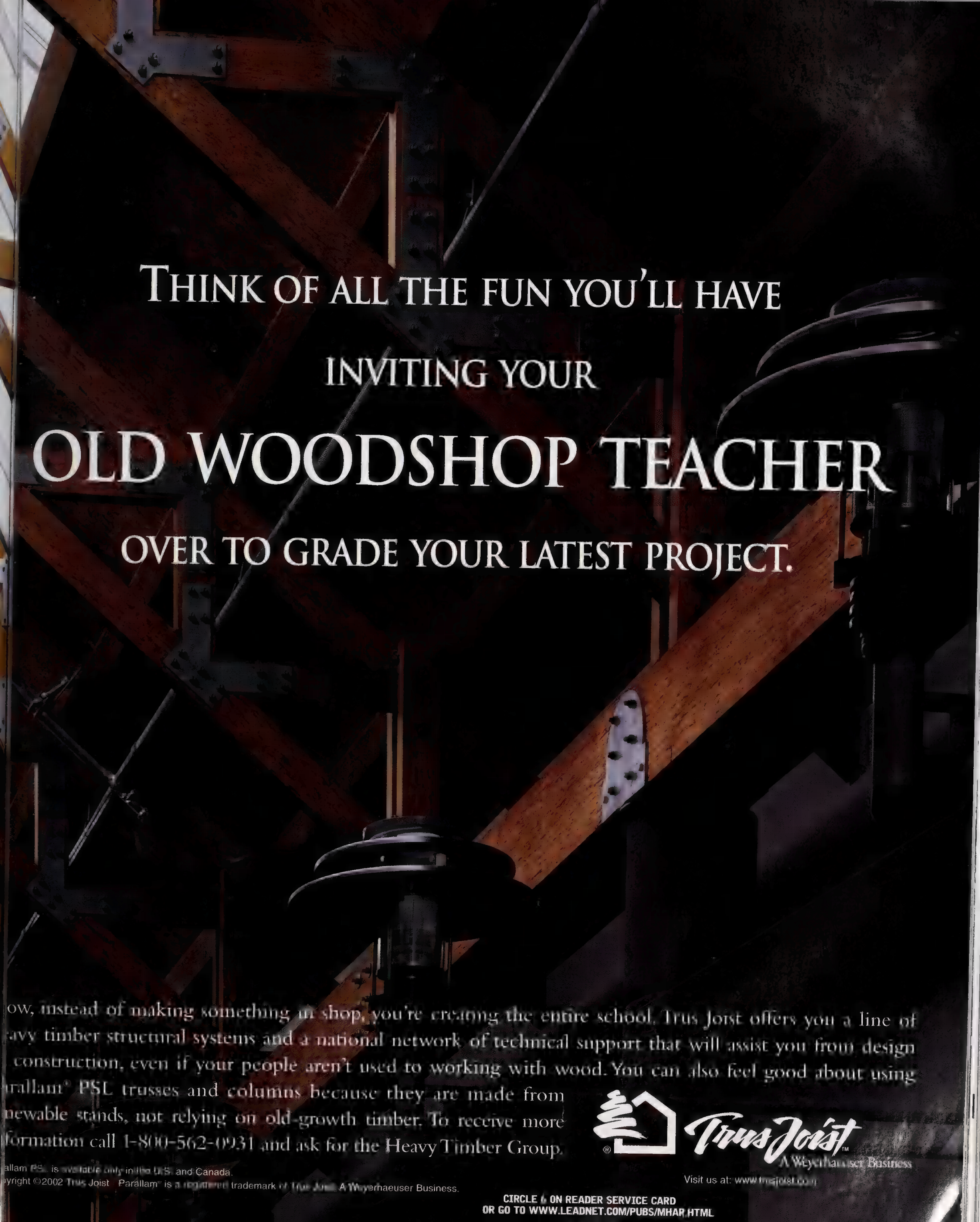

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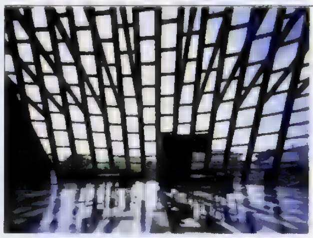
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DESIGN: A profile of James Dayton, who also designed the Minnetonka Arts Center, one of this month's BTS projects. **LIVE**: a selection of entries from an art exhibition sponsored by Bay Area Young Architects. The web gallery features many projects that we didn't have room for in the magazine. Plus, more news and features from the world of the emerging architect.

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BTS: Small Museums

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Culture Club: Browse January's **Expanded Building Types Study,** featuring seven museum projects in addition to the magazine's coverage. They include a caricature museum, a museum of paper art, and one dedicated to the work of Charles Schulz, the creator of Peanuts. Plus, find project descriptions, plans, specs, photos, and links to people and products involved.

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The Value of Gold

Editorial

By Robert Ivy, FAIA

Gold may not tarnish, but it can wear thin. When the American Institute of Architects failed to award a Gold Medal this December, it raised questions about the status of the honor, a valuable institute asset. Despite a decade of innovation and arresting architecture, 2003 will pass with no medalist, prompting the rhetorical question, "Was no architect worthy?" The time has come to revisit the award, to analyze the message it conveys, its selection method, and to probe its hardiness.

Since 1907, when the institute conferred its highest honor on Sir Aston Webb, RA, the winners' list has grown to include an incomparable roster. In 2002, Tadao Ando joined a canon of architectural saints including McKim, Lutyens, Wright, Le Corbusier, Gropius, the Saarinens, Sullivan, Aalto, and Mies van der Rohe. Who could argue with such choices?

Other groups, however, are chipping away at Institute Gold. The intervening years have witnessed a proliferation of awards programs, notably the Pritzker Prize, the Smithsonian Institution's National Design Award, Japan's Praemium Imperiale, and The Aga Khan Award for Architecture. All confer honor; all command media attention, strongly competing for the limelight with the Gold Medal, the AIA's long-established First Prize. What do these groups offer and how do they deliberate?

Most employ distinguished third-party juries, reaching beyond the profession to include critics, educators, even distinguished patrons, thus broadening the reach outside intraprofessional concerns. Typically, their juries travel to visit each candidate's work, as do jurors for the AIA's own Honor Awards. The Aga Khan goes one better than most, sending professional evaluators to project sites to conduct postoccupancy analyses and then pass their findings on to a deliberative body for final determination. The Praemium Imperiale gives the most money (roughly $150,000); the Pritzker seems apt at identifying emerging international design talent.

No stones need be cast. The AIA has a blue-ribbon history of professional management of its honors and awards efforts, including this magazine's partnership with the institute, the Business Week/Architectural Record Awards. The Gold Medal, however, seems to suffer from a structural anomaly, looking inward, rather than outward, for direction and approval.

Uniquely for this award, the AIA relies on its board of directors to evaluate and select the winner. Letters of support accompany the nominations, which are managed by a board advocate, who makes two presentations of each nominee's qualifications. Revamping of the selection system should include examining this process.

2003 president Thompson Penney, FAIA, and the institute have taken an important step toward improvement by calling for a Secretary's Advisory Committee to reevaluate all AIA awards, including the Gold Medal. It is Penney's intention that all awards represent and reinforce "what the AIA and the profession values." That may be a long and demanding process.

The exercise will prove worthwhile, however, if it provokes systemic change for the Gold. The advisory committee could begin by reexamining the published criteria, which sound vague and archaic. This, the institute's highest honor, demands of the winners evidence of "great depth … great breadth," as well as recognition for the "quality of his/her own products." Fine, but missing are many of the values we give lip service to today. Which deserve codifying? Which seem right for this year, but apt to fade? Debate lies ahead.

Like the heir of a valuable bequest, the new leadership of the AIA has both an opportunity and an obligation to make hard decisions about the Gold Medal, including discussions on who determines the winner and why. The time is ripe to pick up the Gold Medal and polish it for another century. Whatever the outcome of the deliberations, the medal should not be left sitting around unused: Gold is too valuable to leave unspent.

Robert Ivy

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Letters

State of the church

I enjoyed reading the review of the Cathedral of Our Lady of the Angels in the November issue [page 124]. I was in Los Angeles the weekend of the opening and was startled at the deep division in criticism over the project. Cardinal Mahony was the target of most of it. Your critique and the accompanying photos and drawings drew me close to the Rudolph parallel, as well, specifically the Chapel at Tuskegee Institute. Moneo's plan could be easily confused with Rudolph, and the building volumes speak to Tuskegee directly.

The question that remains for me is, would a fourth-year architecture student walk into Moneo's cathedral and spend the next three years of their life finding some way to work for him?

—Preston T. Phillips
Bridgehampton, N.Y.

It takes more than a cross

In November's critique of Moneo's Cathedral of Our Lady of the Angels in Los Angeles, Suzanne Stephens accurately identifies the crucial question posed by an examination of this project: "What should a (Catholic) cathedral look like?" She concludes her analysis of the Los Angeles cathedral by qualitatively describing the answer to that question, stating that the typology of the Catholic church building "needs to be forceful, dramatic, and innovative, while maintaining its continuity with the past," and observing that Moneo's forms are "mute" instead. While I agree that the cathedral fails to successfully meet the challenge of wedding innovation with tradition, I am somewhat disappointed by the lack of depth in the author's expressed reasoning for this evaluation.

The author does well to cite Moneo's published thoughts on typology, in which he characterizes a type as inherited forms that provide "a frame within which change operates." Based on this concept, one could submit as an example the Christian adaptation of the secular basilica of antiquity and its subsequent formal evolution that eventually led to the Gothic church. However, the author avoids using history to apply Moneo's theory in relation to his design for the L.A. cathedral and resigns herself only to dismissing historical replication as a generator for a typological design solution. As Stephens admits, the L.A. cathedral is a "noncommunicative … assemblage." Yet, she seems to overlook the implication of Moneo's theory in her attempt to identify the cause of this formal silence. Whereas the harmonious integration of parts, as derived from virtual symmetry and their formal relationship to the whole, was intrinsic to the historical church typology, Moneo's design departs from this "frame" to become an assembly of parts, whereby the parts retain a high degree of autonomy. It fails to embody any substantial symbolic content because its parts are not integrated for the singular purpose of translating a timeless message for the modern age, as the Carolingian abbey, Gothic cathedral, or Renaissance church did for their respective ages. Rather, it relies on the theatrics of an abstract drama to achieve a transcendent aura.

—Dan DeGreve
Dayton, Ohio

Special correspondent Suzanne Stephens replies: I agree with Dan DeGreve that I could have included much more on the typological history of church architecture to discuss Moneo's cathedral design. Indeed, my original draft referred to the development of the dome (from Sta. Costanza in the 4th century) as well as the basilica (Basilica of Maxentius, St. Peter's, etc.), the appearance of the westwork in the Carolingian church, and various developments in Gothic and/or Renaissance churches. But it didn't fit. I also had cut out parts on the complicated concrete construction techniques employed by Moneo. As an architectural historian who has taught this subject, I regret that my critique seems to "dismiss historical replication as a generator for a typological design solution."

Addressing the Gettysburg

Regarding your November editorial ["Down They Come," page 17], the Gettysburg Visitor Center continues to be discussed whenever I get together with preservationists, and not always because I bring it up.

I still fail to understand why the building was condemned by the Pennsylvania State Historic Preservation Office (SHPO), even while the North Carolina SHPO, AIA North Carolina, and N.C. newspapers were united in supporting the preservation of the Wright Brothers Visitor Center, which was declared "noncontributing" in architectural surveys at the same time the Gettysburg one was. Why North Carolina and Pennsylvania acted in such different manners to preserve their contemporary architecture is a mystery to me. Perhaps with changes in the Pennsylvania SHPO, that can be reversed, but the failure of AIA chapters and members in Pennsylvania to support preservation of the Gettysburg Visitor Center remains to be explained.

I think the matter continues to come before the AIA Historic Resources Committee, which has passed several strong recommendations for preservation.

Your idea of a national commission is interesting, but in effect the National Trust's annual listing of the "11 Most Endangered," along with other National Trust initiatives, already serves much the same purpose. The problem is that Richard Moe has already written that he thinks the Gettysburg Battlefield should be restored—though he never bothers to explain how that might be accomplished—and the Gettysburg center destroyed. Should the President appoint a commission, he would most likely seek Moe's and the Trust's advice in appointments.

Thanks for continuing to keep me informed. We may yet win the day.

—Tony P. Wrenn
Via e-mail

Corrections

In the November Lighting Resources [page 255], incorrect text ran with the image of Luceplan's Agaricon lamp. It should have read: "With a body of high-pressure injection-molded polycarbonate, Agaricon can easily be turned on and off with a light touch. Designed by Ross Lovegrove, the lamp uses energy-efficient bulbs of up to 150 watts and measures approximately 14 inches in diameter, with a 3½-inch base."

In November New Products [page 261], the Ballo railing system image was flopped. The correct orientation is shown at left. Also in November, the Herman Miller plant [page 150] was designed by Scogin Elam and Bray Architects, now called Mack Scogin Merrill Elam Architects. On page 134 of that issue, The R.W. Group should have received credit for metal fabrications/stainless steel and GKD metal fabric panels and column enclosures.

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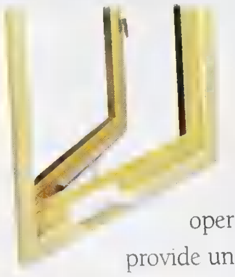

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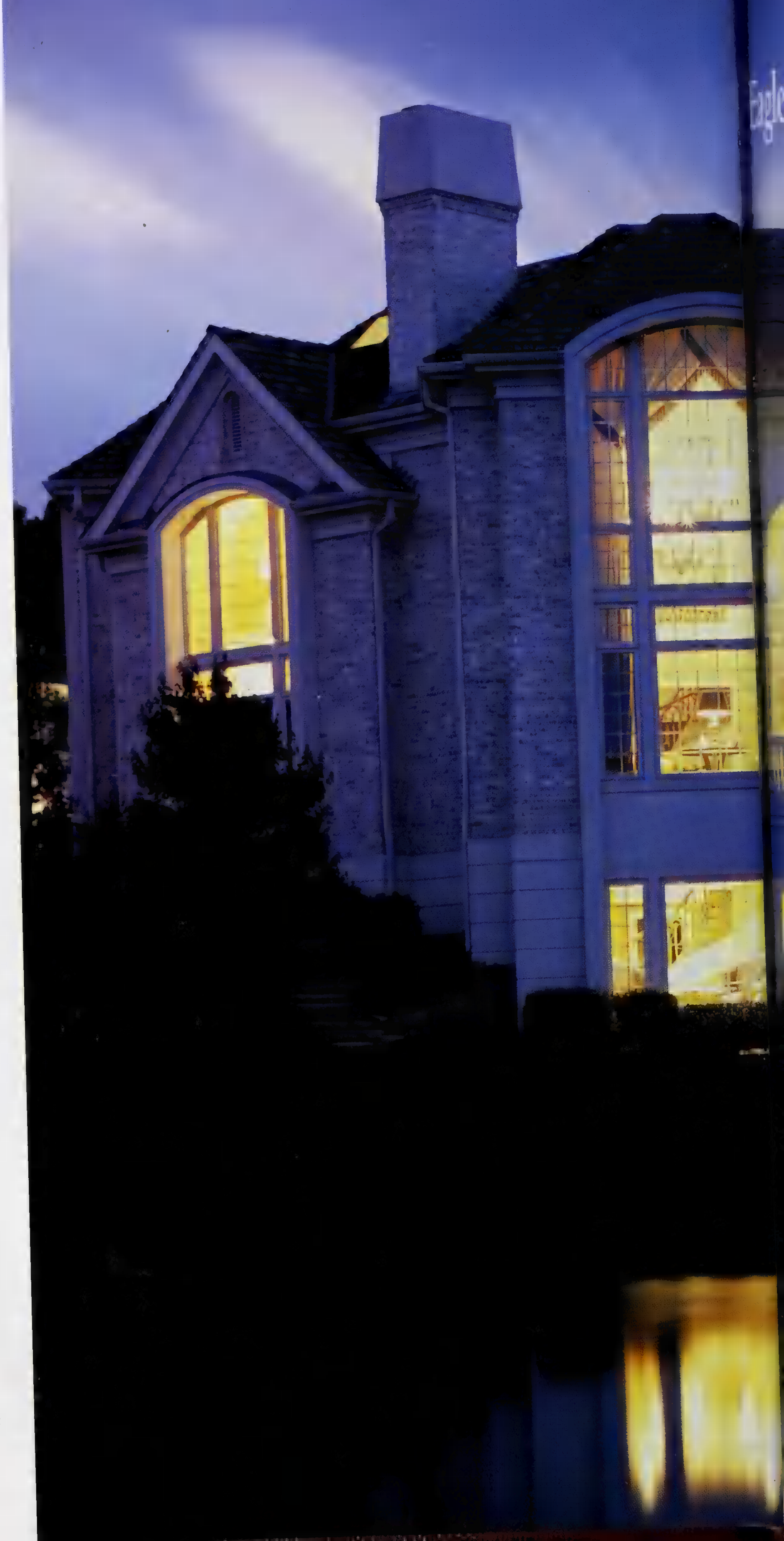

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Record News

Highlights Malecha wins Topaz p. 30
Plans shown for 7 WTC p. 34
Bloomberg's vision p. 36
Ikea threatens Breuer building p. 38

Seattle's Miller/Hull wins 2003 AIA Architecture Firm Award

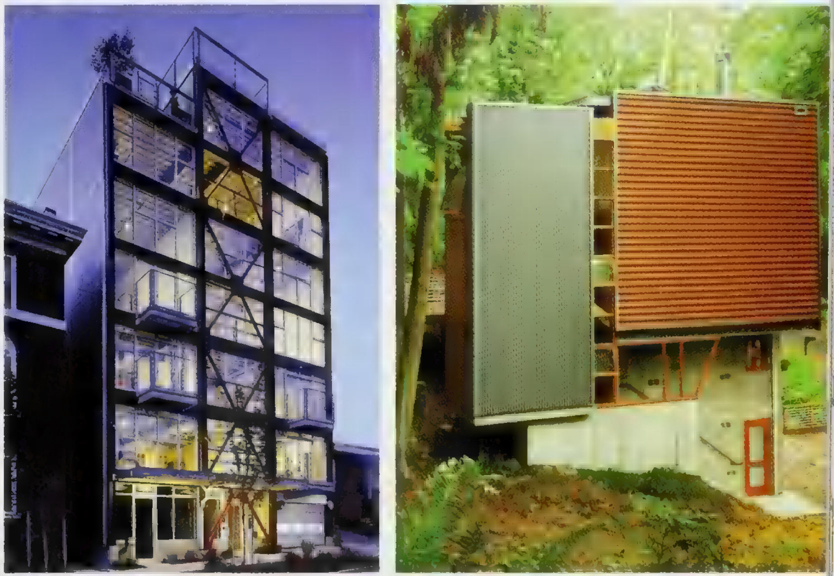
Known for its buildings that are responsive to their Northwest environs, Seattle firm Miller/Hull Partnership has been selected by the American Institute of Architects (AIA) as the recipient of the 2003 AIA Architecture Firm Award.

According to the AIA, "The AIA Architecture Firm Award is the highest honor the AIA bestows on an architecture firm, and is given annually to recognize a practice that has consistently produced distinguished architecture for at least 10 years." Miller/Hull will be honored at the American Architectural Foundation Accent on Architecture Gala, March 8, at the National Building Museum in Washington, D.C.

Miller/Hull Partnership staff in their office.

Founded in 1977, Miller/Hull—led by partners Robert Hull, FAIA, David Miller, FAIA, Norman Strong, AIA, and Craig Curtis, AIA—today has 46 on staff. Its public projects include Fisher Pavilion at Seattle Center, the Roberts Port of Entry, and Bainbridge Island City Hall. Other notable projects in the Pacific Northwest include 1310 East Union live/work lofts, Campbell Orchard House, Michaels/Sisson House, and Novotny Cabin.

Hull told RECORD, "The honor of being recognized reaffirms our work for 25 years. What I believe we're recognized for is the consistency of our work from the beginning to now."



The 1310 East Union live/work lofts (left) and the Michaels/Sisson House (right).

In nominating Miller/Hull's architects, AIA board member Bruce Blackmer, AIA, wrote: "Their exquisitely designed buildings respond to the unique environment within which they are located like few others. Their innovative approach has created a body of work of substance and authenticity without falling into stylistic trappings."

Hull says winning the award may allow his firm to gain more work in other regions. "We tend to do work on the west coast for the most part," Hull says. "We look forward to doing projects in other parts of the country and the world."

John E. Czarnecki, Assoc. AIA

AIA, NCARB seek mutual recognition with European architects

Mutual recognition of professional credentials between the United States and Europe has moved closer to reality. In early December, Gordon H. Chong, FAIA, the outgoing president of the American Institute of Architects (AIA), joined with the president of the National Council of Architectural Registration Boards (NCARB) to sign an accord on principles of mutual recognition with Juhani Katainen, Hon. AIA, president of the Architects' Council of Europe (ACE). The accord commits the AIA, NCARB, and ACE to detailed negotiations in 2003.

An ACE delegate in France said: "We want to achieve total, complete reciprocal treatment." A delegate from Ireland voiced hope that "licensed U.S. architects will be recognized throughout the E.U., and qualified Europeans will be recognized in all U.S. jurisdictions."

The ACE represents about 350,000 European architects through professional organizations and licensing bodies from the E.U.'s 15 member states and all E.U. candidate countries. Some members hope to address a full range of market-access issues, including rights of foreigners to establish firms, to bid on public procurement of design services, and to secure long-term work visas. These questions have already been settled among E.U. member states.

For now, however, negotiations will focus on professional qualifications. European architects say they have a much more difficult process to get licensed in the U.S. than U.S. architects do in Europe. Few European countries require a professional architectural examination.

Thomas Vonier, AIA

Standing from left: NCARB president C. Robert Campbell, AIA ; NCARB president-elect Robert A. Boynton, FAIA; ACE president Juhani Katainen, Hon. AIA; and NCARB president Lenore Lucy, FAIA. Seated from left: AIA 2003 president Thompson E. Penney, FAIA; AIA 2002 president Gordon H. Chong, FAIA; and AIA executive vice president/C.E.O. Norman L. Koonce, FAIA, signing the accord.

OFF THE RECORD

The [illegible] (see story, page 36) are on exhibit now through February 2 at the Winter Garden of the World Financial Center. The exhibition is open daily from 7 A.M. to 11 P.M.

[illegible], was inaugurated as the 79th president of the American Institute of Architects (AIA) on December 6. Penney, who succeeds San Francisco architect [illegible], as president, is president and C.E.O. of the Charleston, South Carolina–based firm LS3P Associates.

A new [illegible] store with a half-acre "green" roof is planned to open next year in Chicago. No word on whether the red Target logo will be created out of natural vegetation.

[illegible] of Atlanta have been selected to design a new U.S. federal courthouse in Austin, Texas. Other firms that were considered for the project were [illegible].

British architect [illegible] was honored with the 2002 Austrian Frederich Kiesler Prize for Architecture and the Arts on December 9 in Vienna.

[illegible] of Baltimore has been retained by Sylvan International to design a new academic campus for 15,000 students in Hyderabad, India. Classes begin in 2005.

The Los Angeles County Museum of Art has postponed its plans for a new $200 to $300 million building by Rem Koolhaas [January 2002, page 47] until funding is more certain.

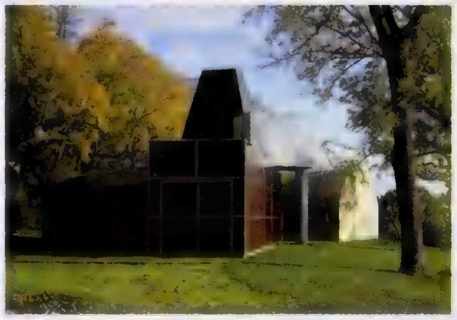
Harwood K. Smith, FAIA, founder of Dallas-based firm HKS, died on December 8 at age 89.

Gehry's Winton Guest House may be moved

The fate of Frank Gehry's Winton Guest House in Wayzata, Minnesota, a western suburb of Minneapolis, is uncertain, but it appears that the house will be saved and moved.

Completed in 1987, the Winton Guest House is considered an excellent example of a small, sculptural residence by Gehry outside of California, where most of his projects had been built up to then. It was designed for Mr. and Mrs. David M. Winton, who owned a main house—designed by Philip Johnson in the early 1950s—on the same property.

The Wintons retired and sold the homes and property to Kirt Woodhouse in 2001. Woodhouse has divided the 12-acre property into three parcels—one with the guest house, one with the main house, and one of open land—and he wants to sell all of the land. He has sold the main house by Johnson, and it is undergoing an interior renovation. Woodhouse has yet to sell the other two parcels, though. Considering the price of property in this affluent suburb, prospective home buyers would likely prefer to build a much larger home on the guest house parcel. Committed to saving the guest house, Woodhouse is looking to donate it to an area arts organization. "My intent is that it is preserved and becomes part of the public domain," Woodhouse says.



The Winton Guest House (above and left) may be donated and moved.

The Walker Art Center has already turned down the offer because the cost was too high to move the building an estimated 16 miles and keep it in heated storage until a new courtyard is ready. Now the Minnetonka Arts Center (this issue, page 144), only ⁶⁄₁₀ths of a mile away, is considering the possibility of accepting the guest house as a donation and placing it next to its new building by Jim Dayton (see Dayton profile, this issue, page 57). The arts center's board is expected to decide this spring if it will accept the donation and the cost to move and rehabilitate the house, which Dayton would work on, estimated to total more than $500,000. *J.E.C.*

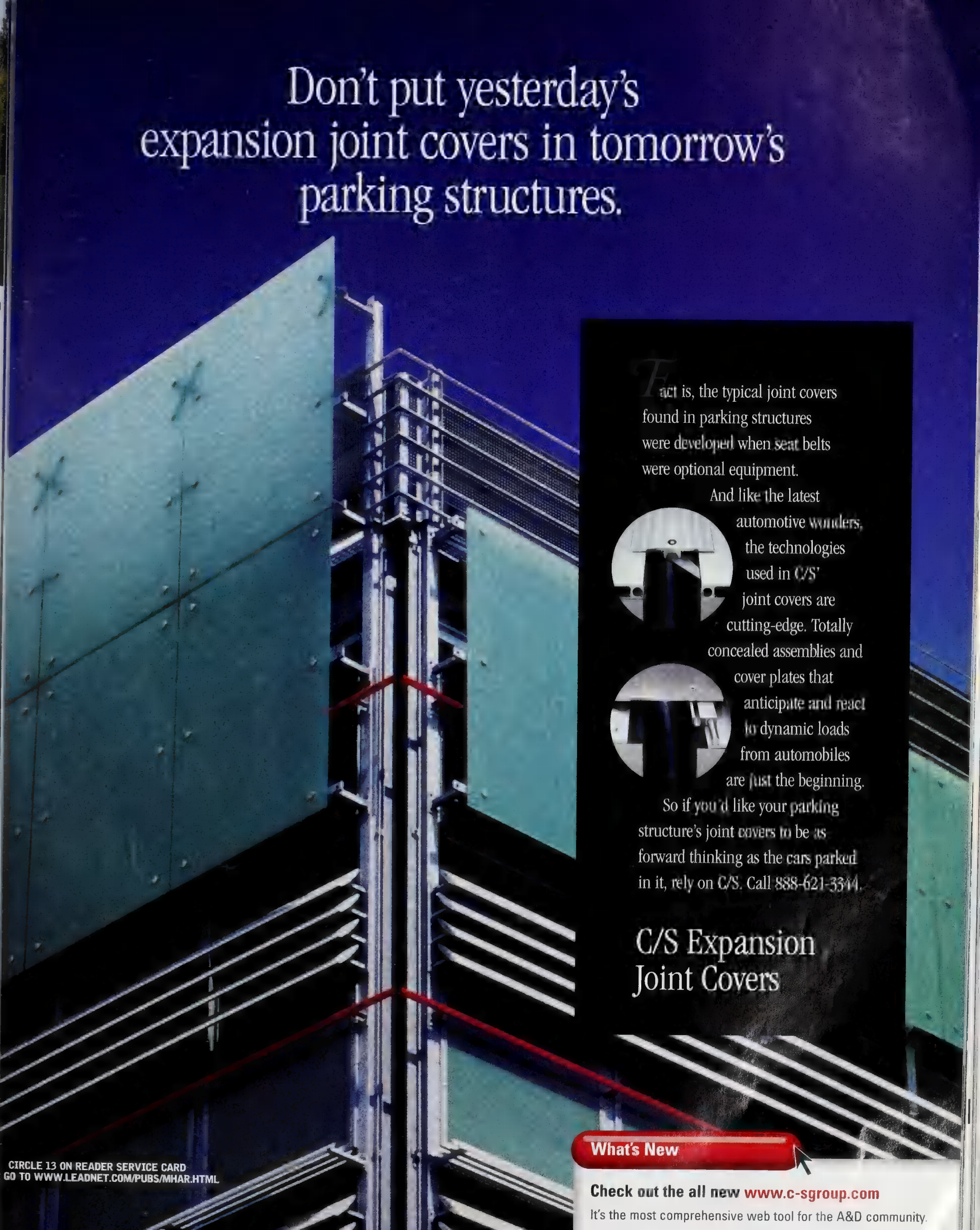
Malecha named Topaz Medallion winner

Marvin Malecha, FAIA (pictured here), the dean of the College of Design at North Carolina State University, in Raleigh, since 1994, has been named the 2003 recipient of the Topaz Medallion for Excellence in Architectural Education. The Topaz Medallion, awarded jointly by the American Institute of Architects (AIA) and the Association of Collegiate Schools of Architecture (ACSA), honors an individual who has made outstanding contributions to architectural education for at least 10 years, and whose teaching has influenced a broad range of students. Malecha, a former president of the ACSA, will be honored in award ceremonies at the ACSA Annual Meeting in Louisville on March 15, and at the 2003 AIA National Convention in San Diego, May 8.

In 2002, Malecha's school won the NCARB Prize for the Creative Integration of Practice and Education. Prior to his appointment at North Carolina State, Malecha served for 12 years as the dean of the College of Environmental Design at California State Polytechnic University, Pomona. *J.E.C.*

AIA does not award Gold Medal in 2003

The American Institute of Architects (AIA) will not award a Gold Medal in 2003. The AIA board of directors voted on December 5, but it did not reach the required three-fourths majority to award the prize. The board of directors is not required to award the Gold Medal each year and has not done so 36 times in the past 95 years. The last year that the AIA Gold Medal was not awarded was 1998. Recent winners include Tadao Ando (2002) and Michael Graves (2001). ***J.E.C.***



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What's New

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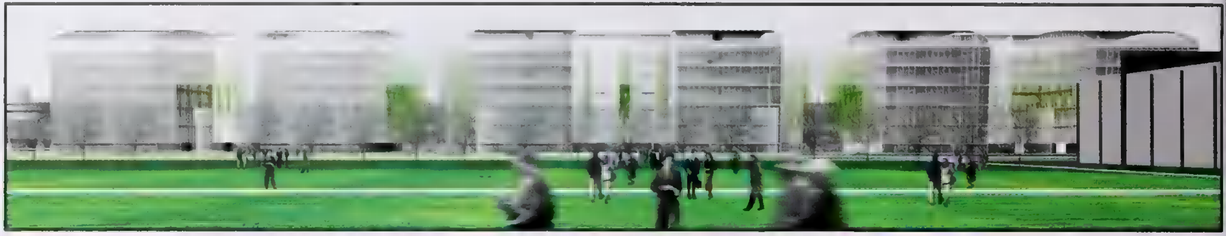
Dorms by Murphy/Jahn under construction at IIT—the first new IIT dorms in 40 years

The Illinois Institute of Technology (IIT), which Ludwig Mies van der Rohe famously planned, is seeing the most construction since Mies himself graced the Chicago campus. A student residence hall, the first on the IIT campus in almost 40 years, is now under construction across the street from Rem Koolhaas's McCormick Tribune Campus Center. Both buildings will be completed by fall.

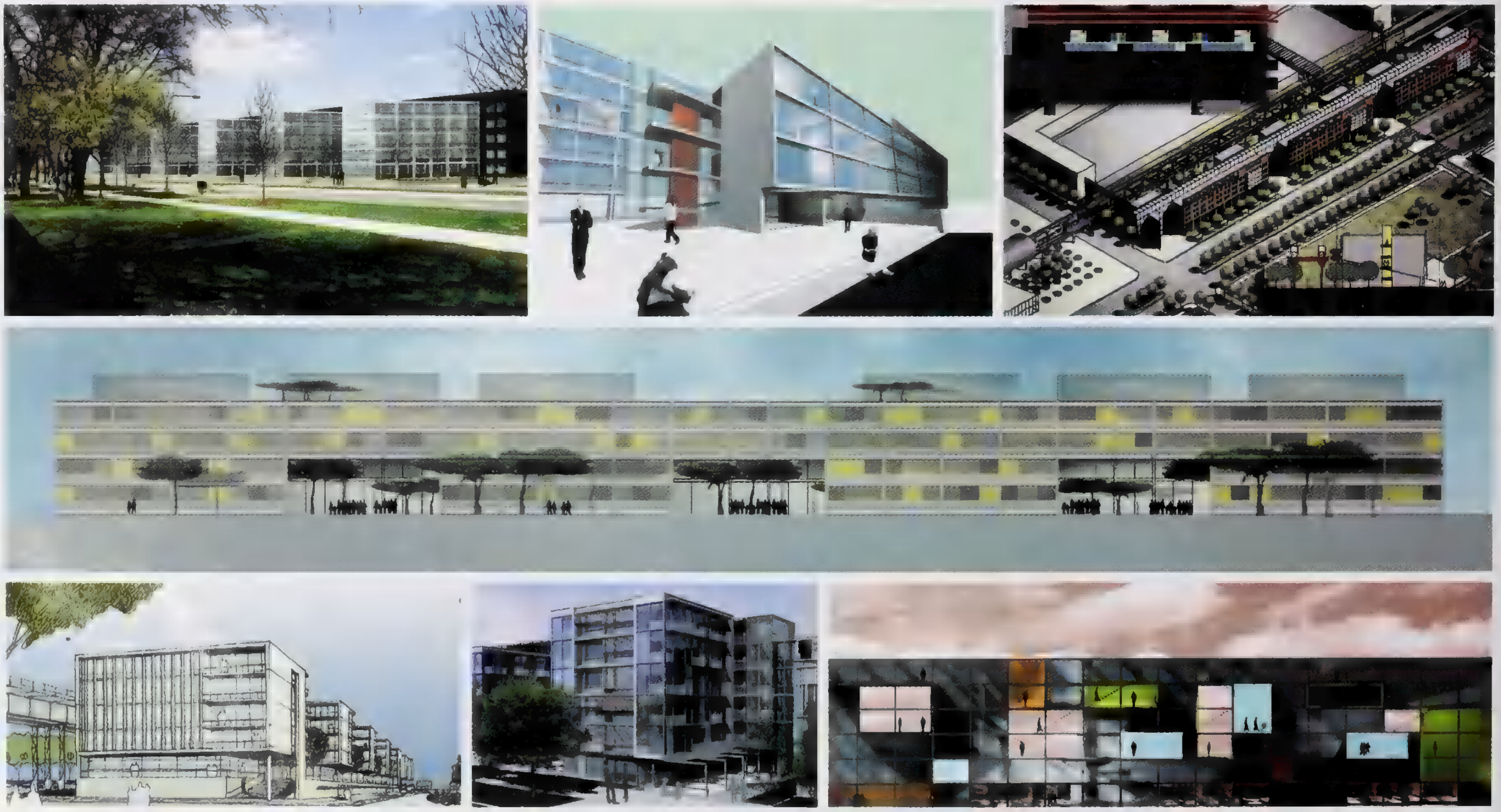

Murphy/Jahn won a competition with this scheme (above) for housing at IIT. Construction has begun and will be completed by fall.

The 367-unit residence hall is the result of a competition that Chicago firm Murphy/Jahn won. Other competition finalists (see schemes below), all from the Chicago area, included Lohan Caprile Goettsch, Krueck & Sexton Architects, Solomon Cordwell Buenz, Booth Hansen, Perkins & Will Architects, Dirk Denison Architects, and STL Architects. IIT held an exhibition of the competition schemes last fall. The hall is funded with $28 million in bond funds.

"We knew only one of the proposals would be picked, but the other designs also represent an amazing level of ingenuity and innovation," says Dirk Denison, studio professor at the IIT's College of Architecture and the exhibition organizer. "All eight designs found a way to complement and respect the existing Mies van der Rohe campus at IIT while at the same time creating new buildings for the way students live today. There's no question that the Jahn design and all seven others in the competition have forward-looking vision."

Because most of the existing dorms are older, small, and lack amenities, many of the IIT students live off-campus. The new hall will help IIT recast itself as a campus with residential life. The hall—to house sophomores, juniors, seniors, and fifth-year architecture students—is being built on a site that had been surface parking bounded by an existing CTA Green Line El track to the east, State Street to the west, and 33rd Street to the north. Helmut Jahn's design (above) features three separate, five-story, 36,000-square-foot buildings that will be joined by exterior glass walls. Glass and polycarbonate screens will shield the eastern exposure that faces the El track. Each building will include a common room on the top floor and a rooftop terrace. At each elevator group, a communal lounge will be located at a bridge. All of the units will be either apartment-style or suite-style. Room suites are arranged with private rooms, private and semiprivate baths, and common living/dining spaces.

Outdoor courtyards will be planted with a dense grove of beech, birch, or quaking aspen trees. *J.E.C.*


Other finalists in the competition for housing at IIT included (top row, from left) Lohan Caprile Goettsch, Krueck & Sexton Architects, Solomon Cordwell Buenz; (middle) Booth Hansen; (bottom row, from left) Perkins & Will Architects, Dirk Denison Architects, and STL Architects.

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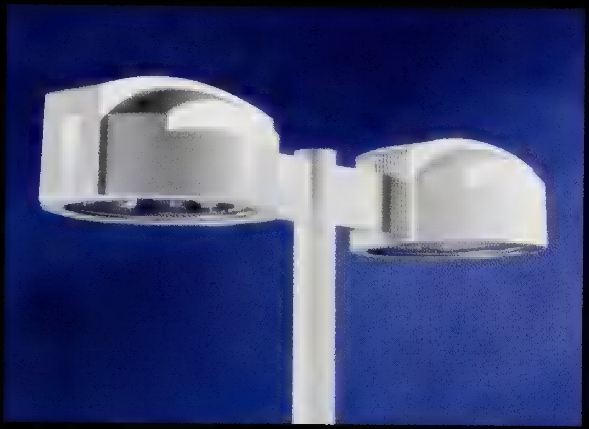

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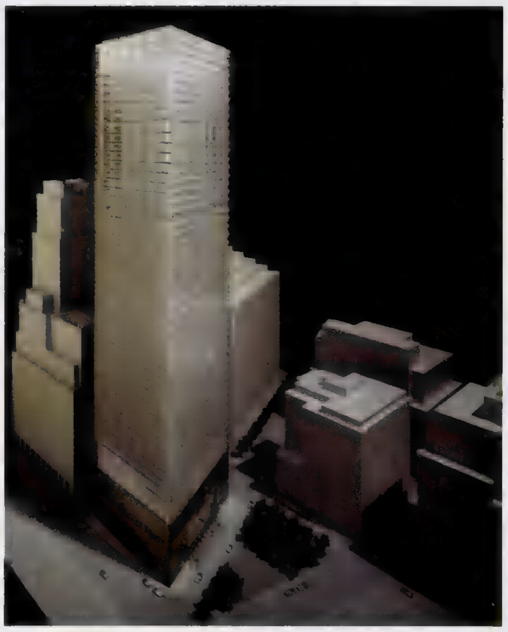
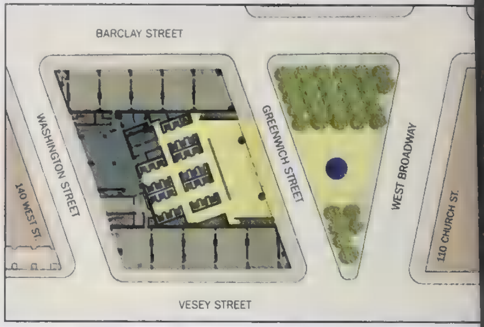
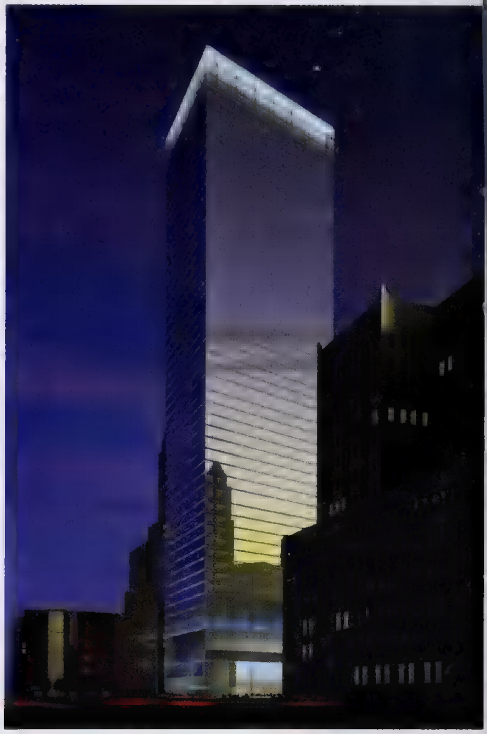
REBUILDING LOWER MANHATTAN







The new building for Silverstein (model, top left, and rendering, above) will have a lobby facing Greenwich Street and a new triangular park.

SOM designs new Silverstein tower for 7 WTC site

The first major building to rise out of the ashes of the World Trade Center (WTC) is a 750-foot-high crystalline box designed by the New York office of Skidmore, Owings & Merrill (SOM). Partner David Childs, FAIA, calls it "Larry Silverstein's audition for the whole site." Silverstein held the lease on the twin towers and owned 7 WTC, the building that the SOM tower will replace. Silverstein is proceeding even though the definitive reason for the collapse of his 1980s behemoth remains elusive.

The new tower is taller but encloses 250,000 fewer square feet than its predecessor. The $700 million building will disappoint those who had looked for a soaring, defiant, or at least innovative gesture in the rebuilding. While SOM added energy-conservation tweaks, and made gestures toward those who think tall-building life-safety must be overhauled, there is essentially little about this building that separates it from the spec-building herd. SOM has designed a carefully tailored curtain wall that defies those who still fear working in tall buildings through the use of floor-to-ceiling glass of unusual transparency. The office floors emerge from a 125-foot-high base clad in two layers of stainless-steel ventilating louvers that will house a massive transformer complex replacing the one lost in the disaster. Artist/designer James Carpenter has collaborated with SOM to add shimmer to the louvers.

A significantly reduced floor plate permits the reopening of Greenwich Street, a north-south artery previously walled off from the rest of the WTC site by 7 WTC. The tower's lobby will face Greenwich Street and will front a small new triangular park paid for by Silverstein and designed by landscape architect Ken Smith.

Should the project, expected to open in late 2005, have involved a deeper post-9/11 rethinking of the office building? "In this country, lawyers and leasing agents rule," replied Childs, "and if it hasn't been done, they don't want to see it." Although the design was only recently shown publicly, Silverstein has been shopping it for months to potential tenants. *James S. Russell, AIA*

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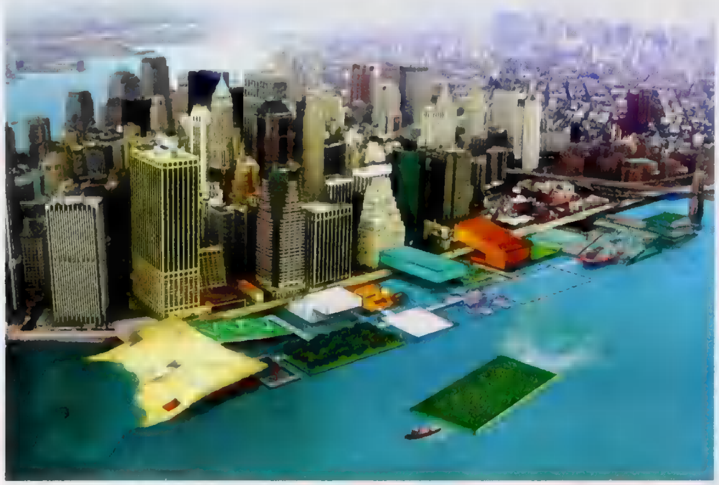
REBUILDING LOWER MANHATTAN

LMDC and Port Authority agree to develop WTC plan by end of January, and Mayor Bloomberg presents his own vision

As seven teams—comprising among the most impressive groups of talent assembled in recent memory—feverishly worked to finish designs for the rebuilding of the World Trade Center site, the sponsoring agencies completed an agreement that may make this extraordinary effort moot.



Among many ideas that he presented in his vision plan, Bloomberg showed an East River park proposal by Diller + Scofidio and the Rockwell Group.

The Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey signed a memorandum of understanding in early December that unites LMDC's efforts with a master plan under development by Stanton Eckstut, FAIA, principal of Ehrenkrantz Eckstut & Kuhn, a New York architecture and urban design firm. Last fall, as the LMDC assembled its roster of talent [RECORD, November 2002, page 28], the Port Authority quietly hired Eckstut even though it had pledged to work with the LMDC. Though Alex Garvin, the LMDC's vice president of planning, design, and development, must endorse the planning, "We are the ones ultimately charged with putting a master plan together," Eckstut told RECORD.

Further complicating matters, Mayor Michael Bloomberg unveiled what was described as his own "Vision for 21st-Century Lower Manhattan" on December 12. Less a plan than a laundry list, the mayor challenged some of the redevelopment ideas put forth so far while endorsing others. The plan, comprising work of city agencies and undisclosed consultants, barely concerns the twin-tower site itself. The mayor asked for bolder and more costly transportation initiatives, including fast rail connections to Newark and Kennedy airports. Augmenting his own audacious call earlier that week for 60,000 new housing units citywide to address the city's perpetual affordability crisis, Bloomberg proposed more housing downtown—some on new piers in the East River—and less commercial space than has been advocated by the twin towers' former tenants. Street improvements and additional parks are also planned. The boldness of the $10.8 billion scheme is needed, said the mayor, "to restore Manhattan to its rightful place as a center for innovation."

The December Port-LMDC memorandum establishes a February 1 date for "recommending" a new master plan, and the mayor's proposals and the seven plans will be considered. However, the deadline all but precludes substantial participation by any of the seven competing teams. Eckstut says, "Everyone's trying to figure out how to incorporate their work."

The LMDC, however, had assured the teams that their ideas would not be handed off to another firm to develop. Some teams are said to have spent more than $500,000 on proposals for which they received a paltry $40,000 in fees, hoping that the LMDC would hire them to take their ideas to the next level of detail. Barbara Littenberg, a principal with Peterson/Littenberg Architecture and Urban Design, one of the seven competitors, likened the process to "a long, drawn-out client interview." *J.S.R.*

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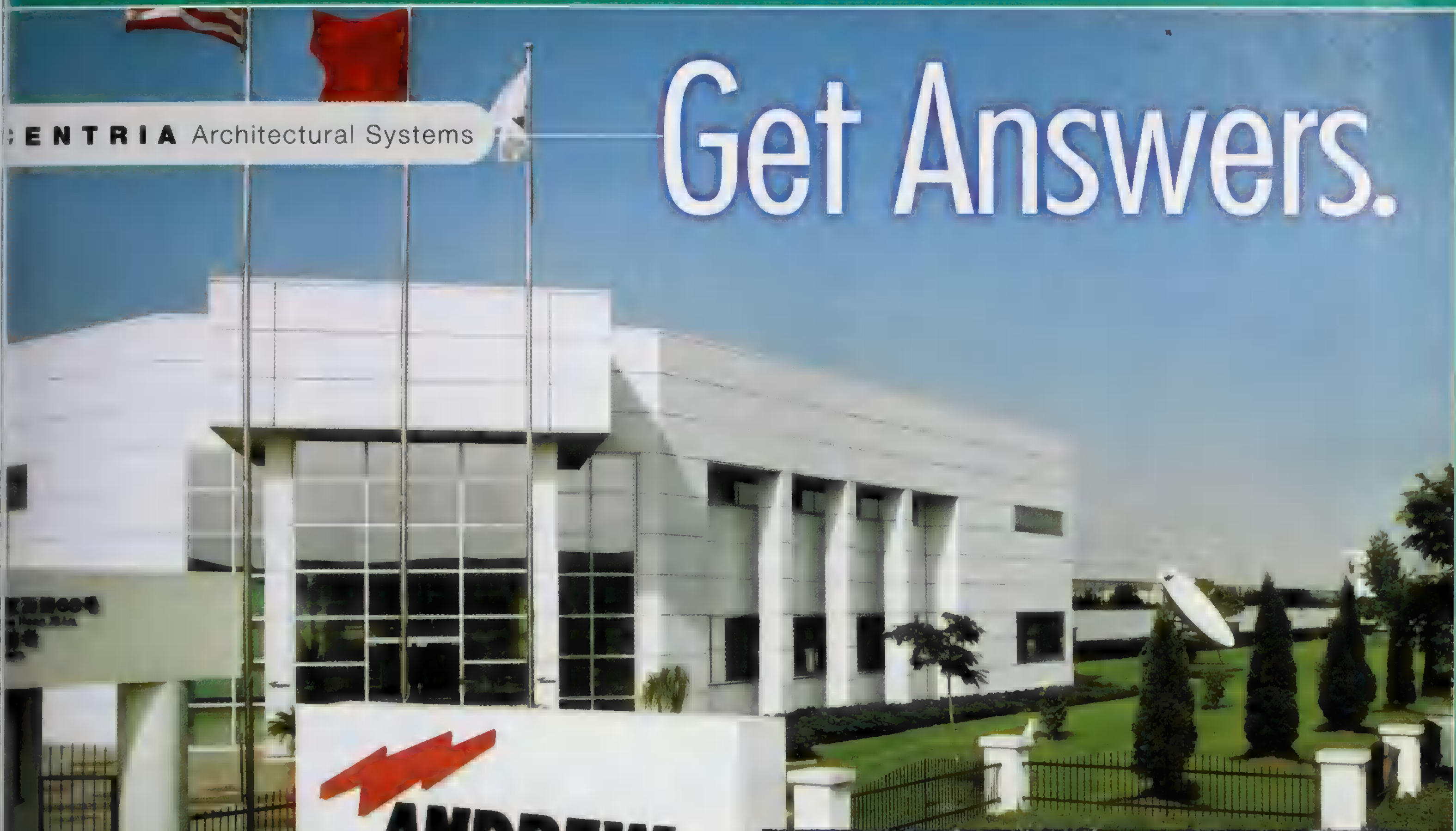

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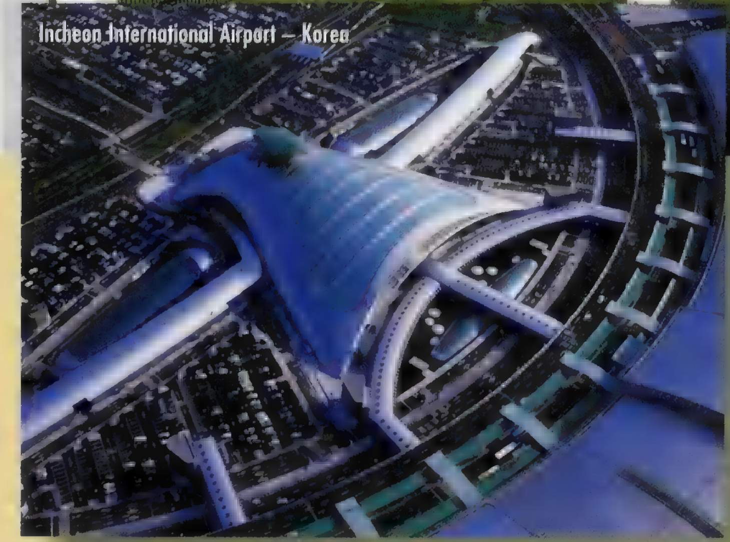
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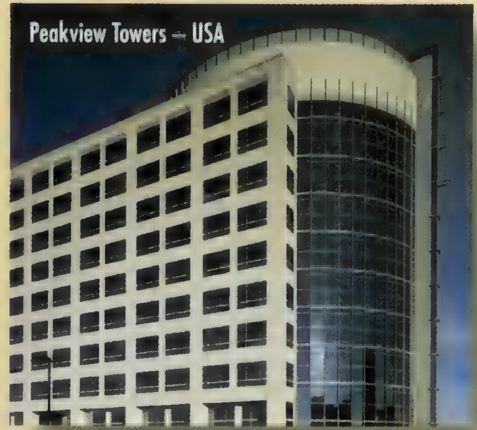
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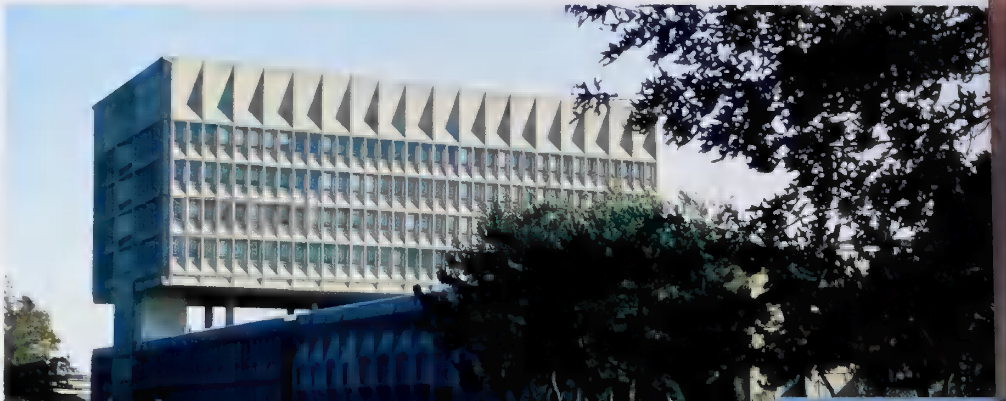


Ikea plans to tear down a significant portion of New Haven Breuer building for parking

Ikea, the Swedish low-cost furniture retailer, plans to demolish a portion of a 1969 Marcel Breuer building in New Haven that was originally designed for the Armstrong Rubber Company. The design features a long, low structure, with a tower situated at one end of the lower building and cantilevered above it on piers. In Ikea's original plan for the site, the building would have been razed entirely and replaced with surface parking.

According to Karyn Gilvarg, the city's chief planner, the mayor of New Haven directed Ikea to preserve the building, which is a prominent landmark from the main highway exit ramp into New Haven. Ikea and the company's architects, Greenberg Farrow Architecture, returned with a scheme that preserved the tower and the portion of the building directly underneath. The city's aldermen approved that proposal on November 7, 2002.

Some architectural advocates refuse to let the issue stand. Robert Narracci, who represents the Long Wharf Advocacy Group, argues that removing the base destroys the characteristic asymmetry of Breuer's design. The group has proposed a scheme that retains part of the rear building. "Our proposal would only eliminate 80 parking spaces from Ikea's plan," Narracci said.

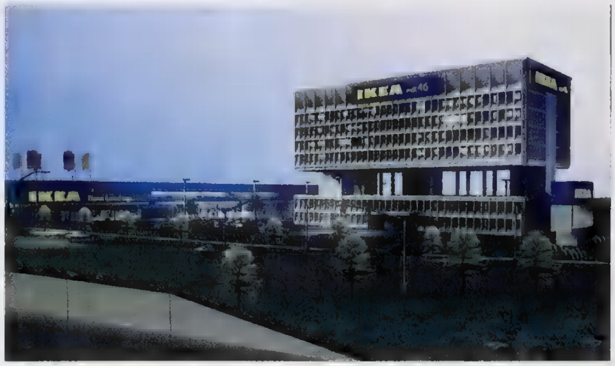
Gilvarg believes that the design has already been sacrificed, no matter what steps are taken to save portions of the building. "The whole idea of the building as a piece of sculpture in a greensward is gone at this point," she said.

The city is still fighting Ikea's effort to place signage for the store on the building, a move that Breuer carefully avoided in the original plan. But with the approval of New Haven's aldermen, Ikea appears to have won the legal and moral right to go ahead.

"To get a 40-person board of aldermen to agree on anything is an accomplishment, especially in an architecture-conscious city like New Haven," said Pat Smith, Ikea's director of real estate.

Still, defenders of the Breuer building feel that Ikea's approach to this process has been hypocritical, especially for a company with Ikea's design credentials. "Marcel Breuer was one of the founders of modern industrial design," Narracci said, "and every steel tube chair that's in every kitchen is somehow descended from his work."

Kevin Lerner



Ikea proposes demolition of much of the low portion of the Breuer building (top) and placing signs on the remaining part (above).

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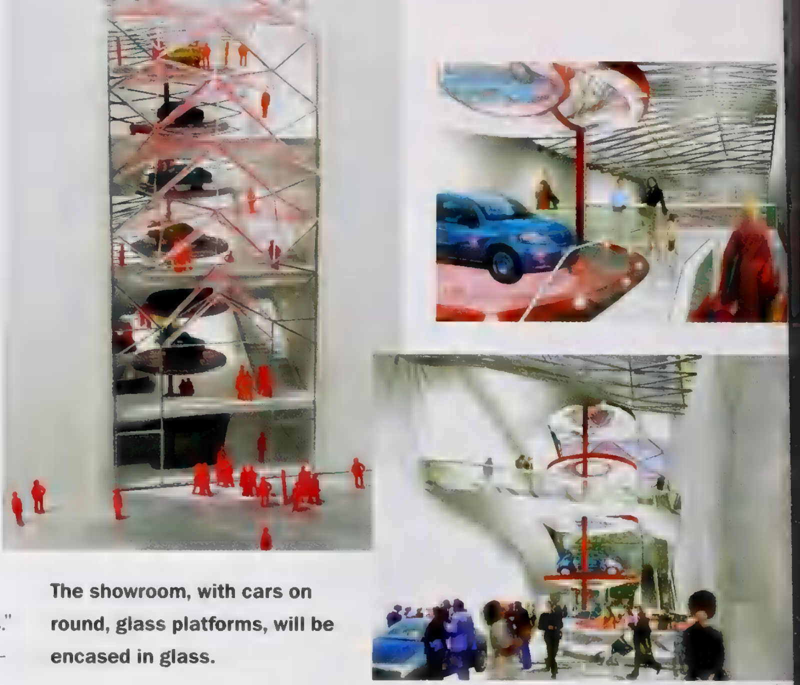
Citroën shows design for Paris showroom with cars on revolving glass platforms



The showroom, with cars on round, glass platforms, will be encased in glass.

French car manufacturer Citroën announced last fall that French architect Manuelle Gautrand was selected to design its new car showroom on Paris's Champs-Elysées.

Gautrand, who has had her own practice since 1991, won against five other short-listed practices, including Zaha Hadid and Christian de Portzamparc, in an open international competition.

The showroom will include a facade of interlocking diamond- and chevron-shaped panes of glass. Rose-tinted panes will form the Citroën logo. The roof will also be glazed and will curve downward toward the rear of the building.

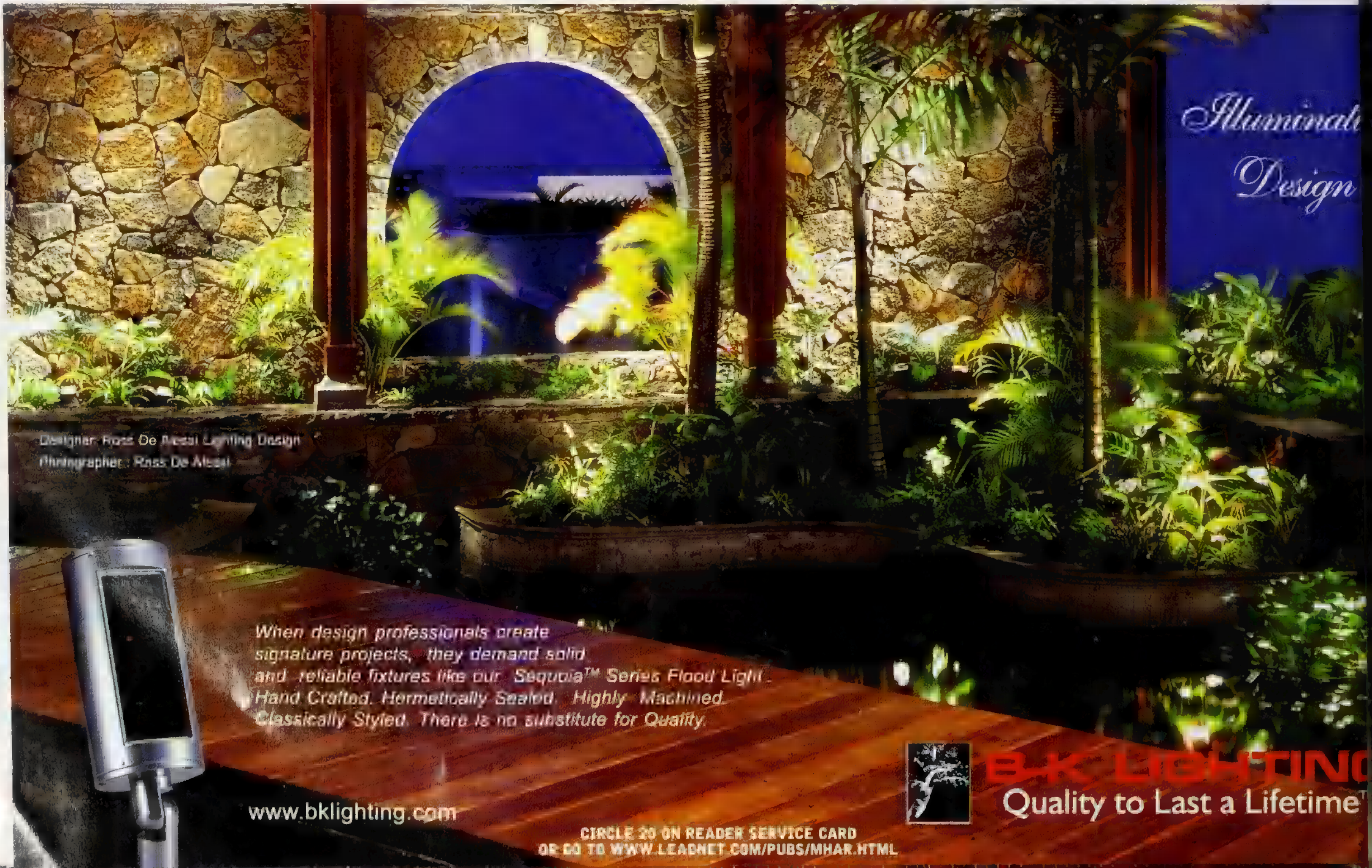
In the entry hall, a stack of seven circular platforms, supported by a 69-foot-high column, will dominate the space. The 20-foot-diameter revolving platforms will be in either clear or red-tinted glass, faceted to resemble headlights and taillights. Each one will have a polished steel convex underside to reflect the car below it. "Playing with perspective, empty spaces, and the sculptured interior," says Gautrand, will make the cars "look like small toys."

A series of escalators and balconies will be on the showroom's periphery. While providing access to the vehicles on display, they will also enable visitors to watch the busy Champs-Elysées.

The first floor, covered in a durable light-colored resin, will double as a shallow ramp rising toward the back of the showroom. Five more platforms, each mounted on a hydraulic piston, will move up and down. When they rise, natural light will filter down into the basement through the circular openings they expose in the floor. The platforms could also be lowered into the sublevel rooms.

Citroën's announcement comes 15 months after its competitor Renault opened its own revamped showroom on the opposite side of the famous boulevard [RECORD, May 2001, page 52].

The showroom site will remain under a restaurant chain's management until 2004, when its 20-year lease ends. Work on the showroom will then begin. *Robert Such*



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News Briefs

Barnes Foundation petitions for relocation Claiming that its current location is financially untenable, the Barnes Foundation, currently in a 24-room gallery designed by Paul Cret in Lower Merion Township, Pennsylvania, is seeking judicial permission to move its acclaimed art collection to a new building in Philadelphia. The request, if granted, would break the will of founder Dr. Albert C. Barnes.

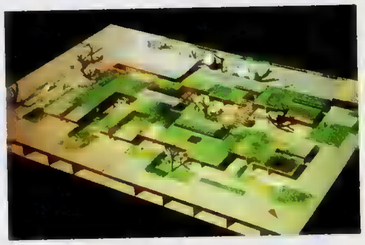
The new building would be constructed on Benjamin Franklin Parkway in downtown Philadelphia, a museum-lined boulevard headed by the Philadelphia Museum of Art. The Pew Charitable Trusts and the Lenfest Foundation have offered to defray the total cost of the project, estimated at $150 million. According to the scheme, the foundation's offices would remain in its current home.

The Barnes Foundation was established in 1922 as an academy of fine arts and horticulture. Its collection of Impressionist and early Modernist art was recently valued at $25 billion.

Barnes may leave its home (above).

Behnisch, Behnisch & Partner wins competition to design school complex Behnisch, Behnisch & Partner has won an international competition to design a school for 100 children with mental and physical handicaps. Now under construction in Herbrechtingen, in southern Germany, the 50,000-square-foot building will be completed in July 2004.

The Stuttgart and Los Angeles–based firm's winning scheme examines "how architecture can help children develop their imagination and their social awareness," says principal Stefan Behnisch. The 49,500-square-foot school will have several single-story wood structures grouped around a central courtyard. The school responds to disability requirements while offering opportunities for learning and play. A series of terraces will serve as outdoor classroom spaces, for example.


School will benefit disabled children.

IIT's Crown Hall will be restored.

IIT will restore Mies van der Rohe landmarks The Illinois Institute of Technology has launched a $20 million fund-raising campaign to restore and upgrade Wishnick and Crown Halls, both designed by Ludwig Mies van der Rohe. Wishnick Hall will be outfitted and wired for conversion into a center for biomedical engineering and science teacher education. Crown Hall's windows and ceilings will be overhauled. Both buildings are structurally sound.

Former Illinois governor James Thompson has been charged with spearheading the fund-raising drive. He will serve as chair of the newly formed Mies van der Rohe Society.

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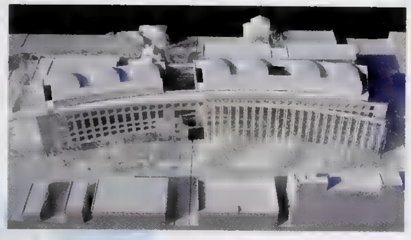
Moshe Safdie's design for Mobile federal courthouse unveiled The United States General Services Administration (GSA) has unveiled Moshe Safdie's design for a new $71 million federal courthouse in Mobile, Alabama. The 322,000-square-foot courthouse will comprise 10 courtrooms, plus four more for future expansion. Safdie's design, developed with Sherlock, Smith and Adams of Montgomery, Alabama, as associate architect, was chosen under the auspices of the GSA's "Design Excellence" program.

GSA Evaluation Board member Jay Chatterjee has called Safdie's design a "veritable living room for the residents of Mobile." The low-rise courthouse is similar in height to the existing John A. Campbell Courthouse. The volume steps down as it reaches northward, where it shares a boundary with a residential community. In order to emphasize transparency, the entrance is a glazed portico that extends to a curved colonnaded arcade. The arcade runs the length of the two-block site. Gathering spaces in front of the building will be landscaped to meet the GSA's rigorous security requirements.

Safdie won the GSA competition in 2002 against finalists Wolf Architecture, Mack Scogin Merrill Elam Architects, and Garrison Siegel Architects. Construction will begin in 2004 and will be complete in early 2007.



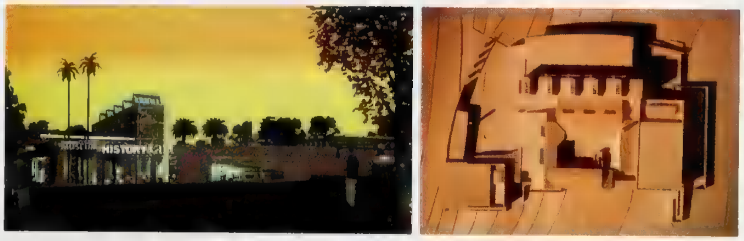
Safdie's Mobile courthouse will include a curving arcade.

David Martin chosen for Ventura County museum AC Martin Partners has won an invited competition to renovate and design an addition to the Ventura County Museum of History & Art. Frederick Fisher and Partners and Barton Myers Associates were among the finalists.

In this $3 million project, the museum will replace its white stucco facade with one constructed of local river rock and cedar. An 18,000-square-foot addition, which will include galleries, retail space, and meeting rooms, will surround the existing 15,000-square-foot museum. A path weaves the buildings together through a series of protected courts, open gardens, and gallery exhibits.

Italian architect and designer Achille Castiglioni dies at 84 Achille Castiglioni, whose witty designs for domestic objects helped place Italy at the forefront of modern design, died on December 2 at age 84 in Milan. He is perhaps best known for the Arco floor lamp, designed in 1962, which has a chrome ball shade suspended on an arch of steel from a marble base. After Castiglioni's 1944 graduation from Politecnico di Milano, he joined his brothers Livio and Pier Giacomo in their design studio. Their collaboration lasted until Pier's death in 1968. In 1997, the Museum of Modern Art held a retrospective show, *Achille Castiglioni*.

News Briefs by David Sokol.



Martin's addition to the Ventura museum will surround the existing structure.

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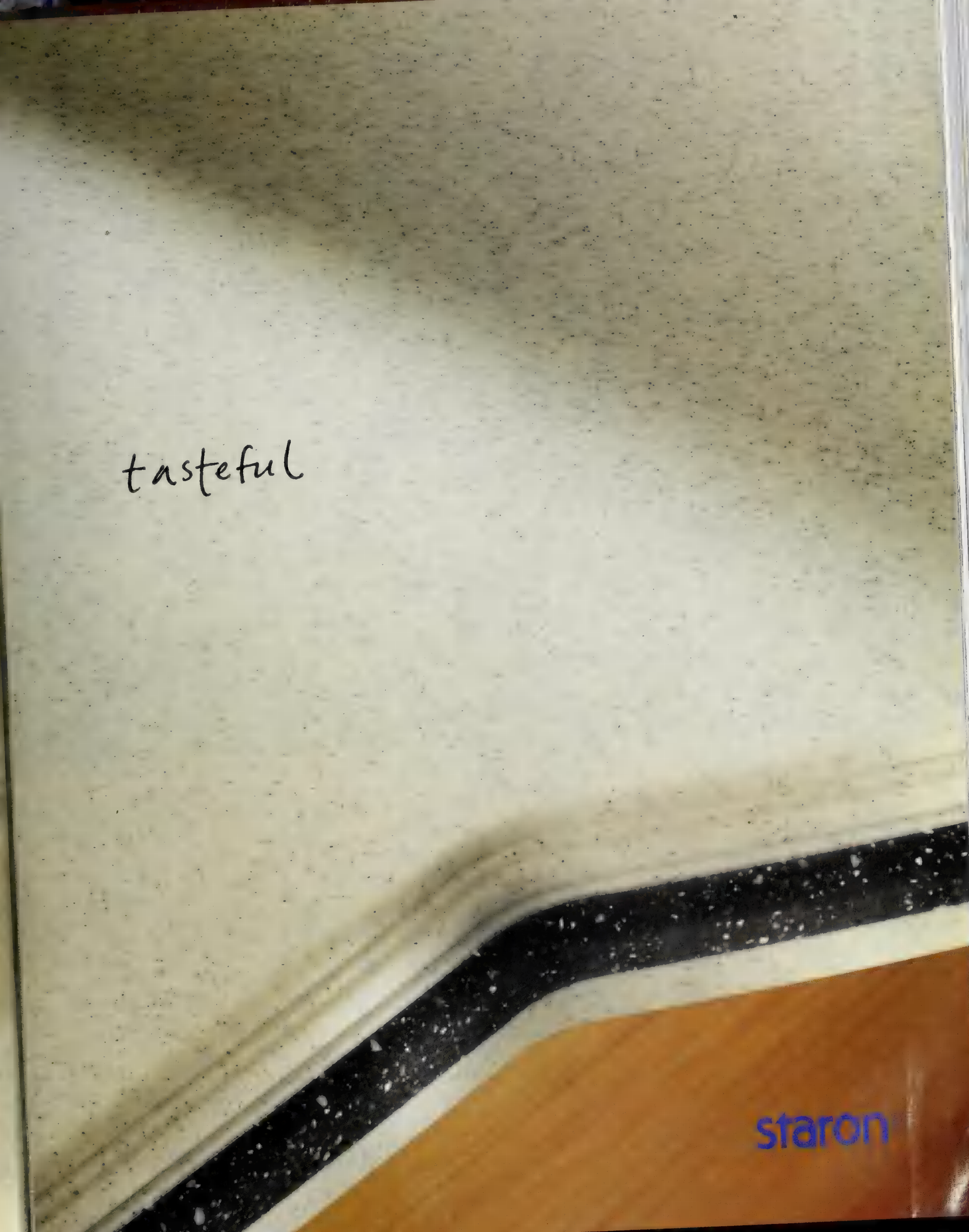
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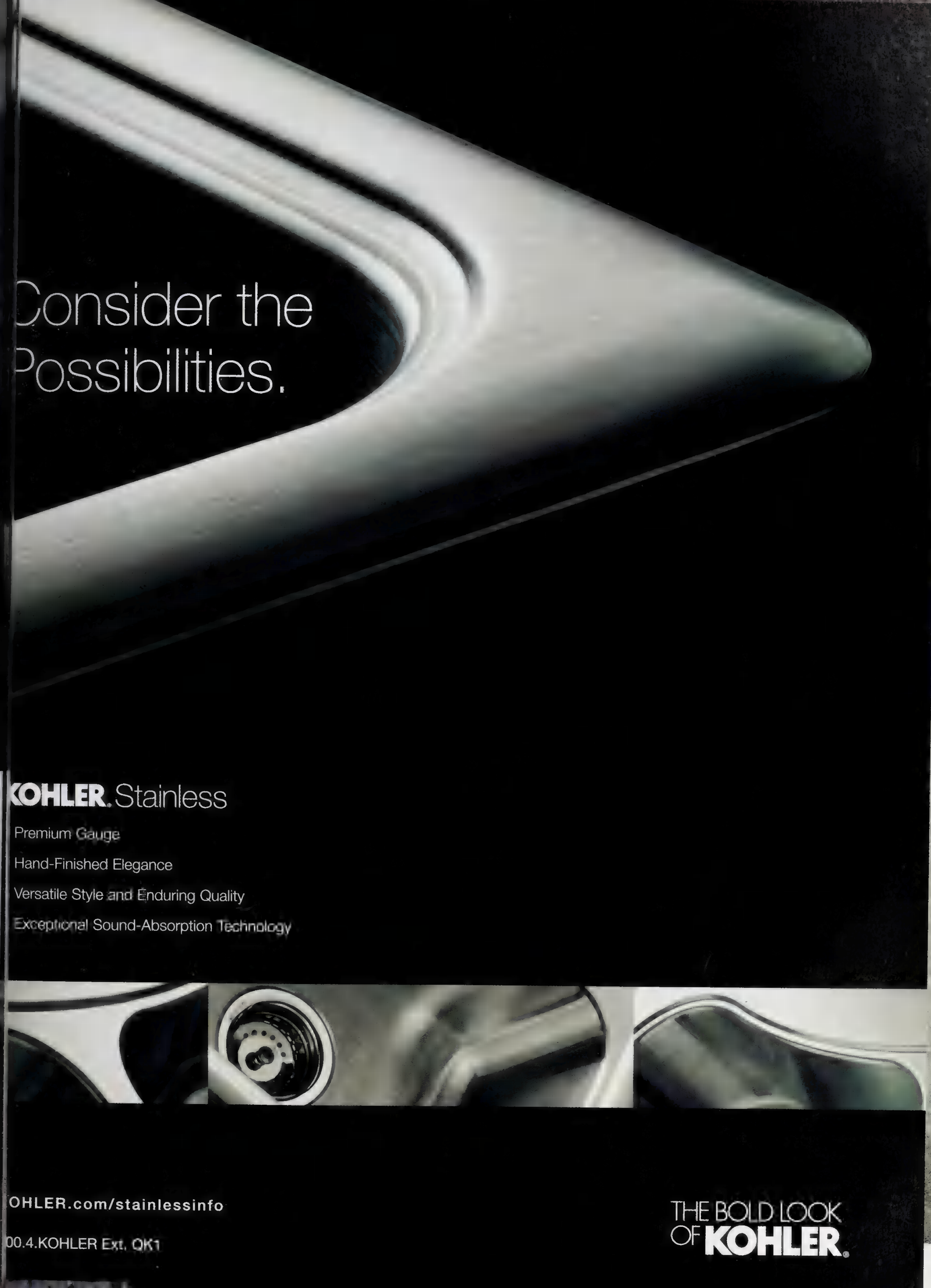

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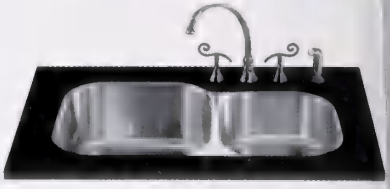

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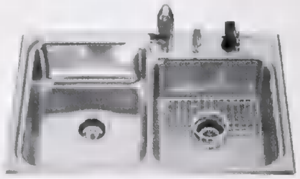

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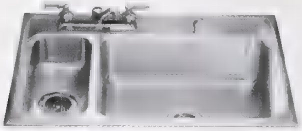

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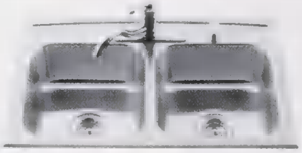

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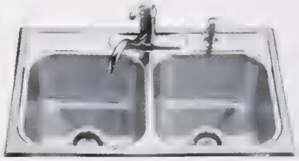

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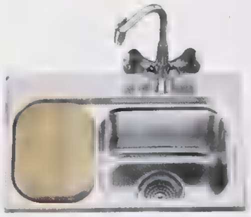

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Dates & Events

New & Upcoming Exhibitions

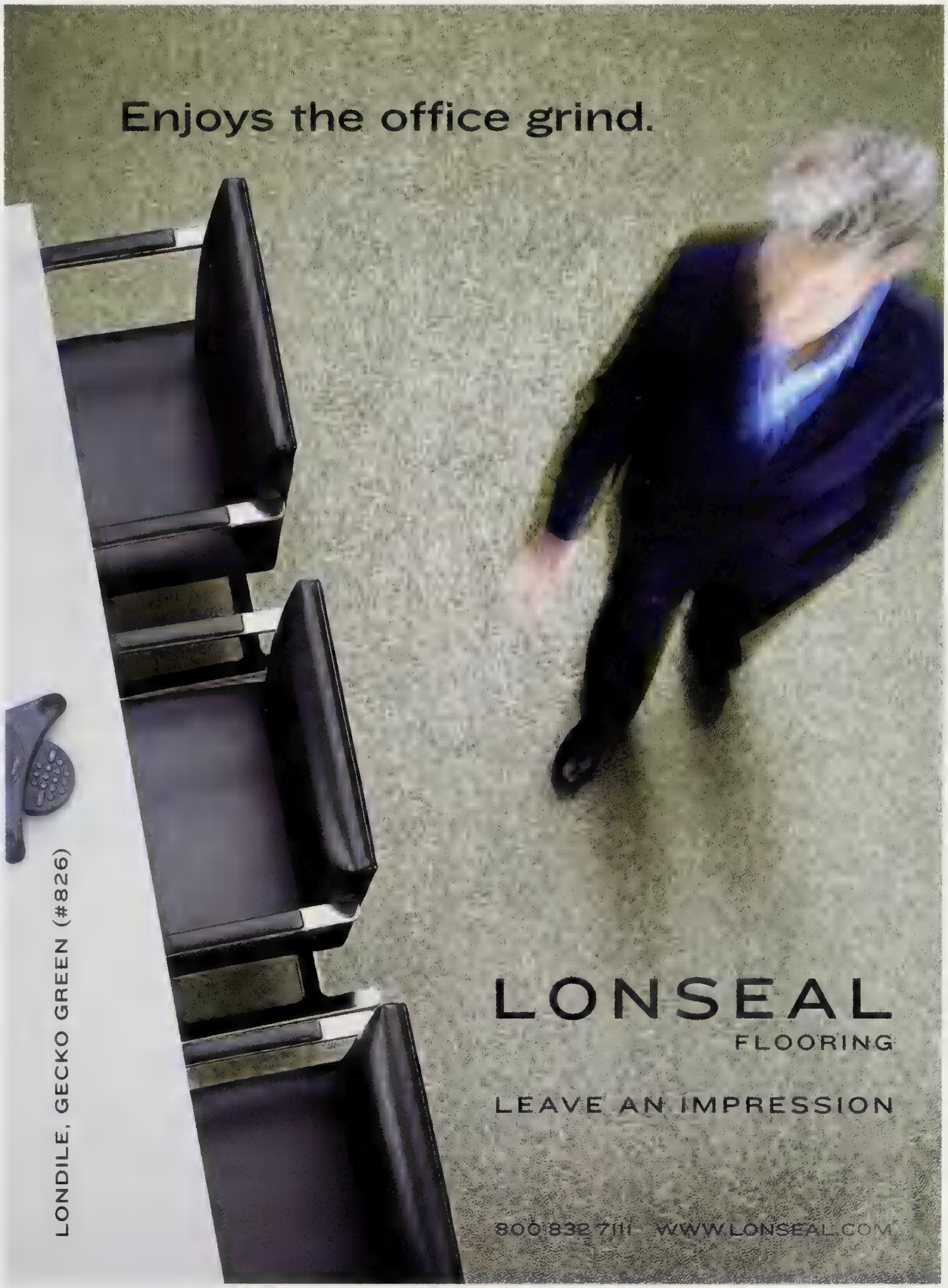
Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, the exhibition will demonstrate the transformative powers of sustainable design. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Intricacy
Philadelphia
January 18–April 6, 2003
Guest curated by the architect and theorist Greg Lynn, this exhibition includes works by architects, designers, and artists that reflect an emerging sensibility that Lynn has labeled "intricacy." The exhibition synthesizes a vast geography of ideas and practices drawn from many disciplines and cultural fields, announcing a new way of thinking about the interrelation of concepts and techniques on an abstract, holistic scale. At the Institute of Contemporary Art at the University of Pennsylvania. Call 215/898-5911 or visit www.icaphila.org for more information.

Leonardo da Vinci, Master Draftsman
New York City
January 22–March 30, 2003
The first comprehensive survey of Leonardo da Vinci's drawings ever presented in America, this international loan exhibition will bring together nearly 120 works of extraordinary beauty by one of the great masters of all time. The show will survey Leonardo da Vinci's staggering contribution as an artist, scientist, theorist, and teacher. At the Metropolitan Museum of Art. Call 212/570-3951 or visit www.metmuseum.org for more information.

Shigeru Ban
Cambridge, Massachusetts
January 27–March 16, 2003
This exhibition will explore contemporary Japanese architect Shigeru Ban's innovative design approach and will trace the architect's investigation of materials, structural systems, and methods of construction in the development of alternative architectural designs. At the Harvard Design School. For more information, visit www.artmuseums.harvard.edu.

Next: LWPAC
Vancouver, B.C.
January 30–May 2003
The second exhibition presented in *Next*, a series on emerging artists from the Pacific Rim. Vancouver architect Oliver Lang, a partner in LWPAC (Lang Wilson Practice in Architecture Culture) will redesign the *Next* space, a laboratory for new art and ideas in a wide variety of media. A new gallery will be designed by LWPAC to complement and accommodate this program, not only to generate a new space but also to document the process of its production. At Vancouver



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Dates & Events

Ongoing Exhibitions

Me, Myself and Infrastructure: Private Lives and Public Works in America
Washington, D.C.
Through February 16, 2003
This exhibition presents a consumer's-eye view of the built environment. In a dramatic shift away from traditional presentations of civil engineering, the show demonstrates how infrastructure is much more than a network of cable, pipe, and beams. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Herzog & de Meuron: Archaeology of the Mind
Montreal, Canada
October 23, 2002–April 6, 2003
"Since architecture itself cannot be exhibited, we are forever compelled to find substitutes for it," said Jacques Herzog regarding this exhibition (which he and Pierre de Meuron curated in collaboration with Philip Ursprung). The substitutes on display are plentiful and plenty strange—any object that has served as a source of information for the architects. At the Canadian Centre for Architecture. Call 514/939-7000 or visit www.cca.qc.ca for more information.

Tadao Ando: Architect
Williamstown, Massachusetts
September 28, 2002–April 27, 2003
Featuring an installation designed by the architect himself, with models, drawings, prints, and videos. Since Ando has been chosen as the architect for the Art Institute's expansion and campus enhancement, the show is for trustees and architects alike. At the Clark Art Institute. For information, call 413/458-2303 or visit www.clarkart.edu.

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural insinuations regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org for more information.

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New Hotels for Global Nomads
New York City
October 29, 2002–March 2, 2003
With a title that sounds like a Koolhaas co-optati this exhibition about hotels describes them as sy-bols of contemporary leisure. With a focus on opulent, Vegas-style hotels with gimmicks, attrac tions, and new domestic technologies, the show places these heavily designed spaces in historica context. At the Cooper-Hewitt National Design Musuem. Call 212/849-8400.

Krier/Eisenman: Two Ideologies
New Haven
November 4, 2002–February 7, 2003
The debate between the opposing architectural philosophies of Krier and Eisenman is the subje of this exhibition. Work by Krier, who focuses on considerations of context, site, and function to inform his designs, will be displayed across from Eisenman's, who regards abstract form as the architect's singular consideration. At the Yale School of Architecture. Contact 203/432-2288 visit www.architecture.yale.edu.

David Adler, Architect: The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. Also included will be major documents from the Art Institute's permanent collection and photos newly realized by the renowned Chicago architectural photography firm of Hedrich-Blessing. At the Art Institute of Chicago. Call 312/443-3600 or visit www.artic.edu

Conferences, Symposia, Lectures

Dallas Architecture Forum Lecture Series
Dallas
November 21, 2002–February 13, 2003
The Dallas Architecture Forum features its seventh season of lectures by some of the most important designers in the world. Included in the series will be talks by Enrique Norten, Rick Joy, and Terence Riley. For information, call 214/740-0644 or visit www.dallasarchitectureforum.org.

Designer's Saturday
Hong Kong
February 22, 2003
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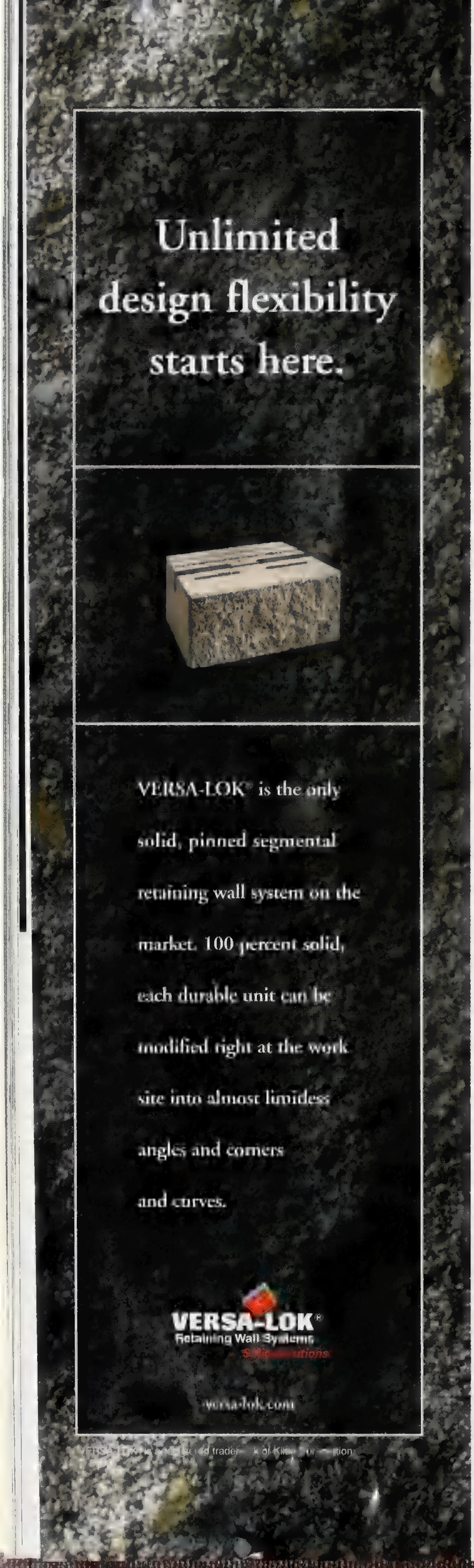

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Orlando, Florida
March 24–27, 2003
This event will feature the International Tile and Stone Exposition, the International Flooring Exposition, and the Vision Conference Program. At the Orange County Convention Center. For more information, call 561/776-0600 or 800/881-9400, or visit www.coverings.com.

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New York City
May 5–8, 2003
This event will be the largest to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering, design, and end-user professionals from around the world. At the Javits Convention Center. For information, call 404/220-2215 or visit www.lightfair.com.

Competitions and Awards

9th Annual AIA London/U.K. Chapter Excellence in Design Awards
Deadline for submissions: January 22, 2003
The American Institute of Architects, London/U.K. Chapter seeks entries from British-based architects, as well as from architects throughout the world, for built projects in the U.K. In parallel, the chapter seeks entries for the Student Travel Awards, which honor work from students currently enrolled in U.K. universities. Visit www.aiauk.org or send e-mail to designawards@aiauk.org.

The Architectural League of New York: Inhabiting Identity
2002–2003 Young Architects Forum
Deadline: January 30, 2003
Open to architects and designers 10 years or less out of undergraduate or graduate school. Winners receive a $1,000 cash prize, exhibit their work, receive publication of their work in an annual catalog, and present lectures during May and June at the League, in New York City. Call 212/753-1722 or visit www.archleague.org.

The Kenneth F. Brown Asia Pacific Culture and Architecture Design Award
Deadline: January 31, 2003
The School of Architecture, University of Hawaii at Manoa is soliciting entries for the Fourth Kenneth F. Brown Architecture Design Award Program. The design award program is open to any architectural work located in the continent of Asia or a region that touches the Pacific Ocean. Entered projects should have been completed between January 1992 and December 2002. The jury will seek a design intervention that makes the most sensitive, creative, and critical response to its built, cultural, and natural environments. Visit http://web1.arch.hawaii.edu/soa_alt1/events or call 808/956-3515.

Southeastern Center for Contemporary Art: The HOME House Project
Registration deadline: February 1, 2003
SECCA will present an ambitious two-part project that addresses the future of affordable housing. First, the HOME House Project Design Open Invitational will showcase innovative design solutions for affordable living/shelter by artists, architects, and designers from the U.S. and will lay the groundwork for the second initiative, the HOME House Project, which will transform these innovative designs into functional built structures for low- and moderate-income families. For additional information, call 336/725-1904 or visit www.secca.org.

The 2003 DuPont Benedictus Awards
Call for entries deadline: February 14, 2003
The competition, a collaborative effort between DuPont and The American Institute of Architects, with cooperation of the International Union of Architects, recognizes the innovative and significant use of laminated glass. Architects may submit projects in seven categories: commercial, community, education, government, healthcare, recreation, and residential. For more details, call 202/367-1633 or visit www.aia.org or www.dupontbenedictus.org.

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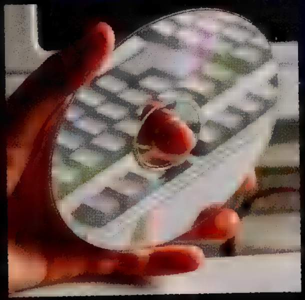

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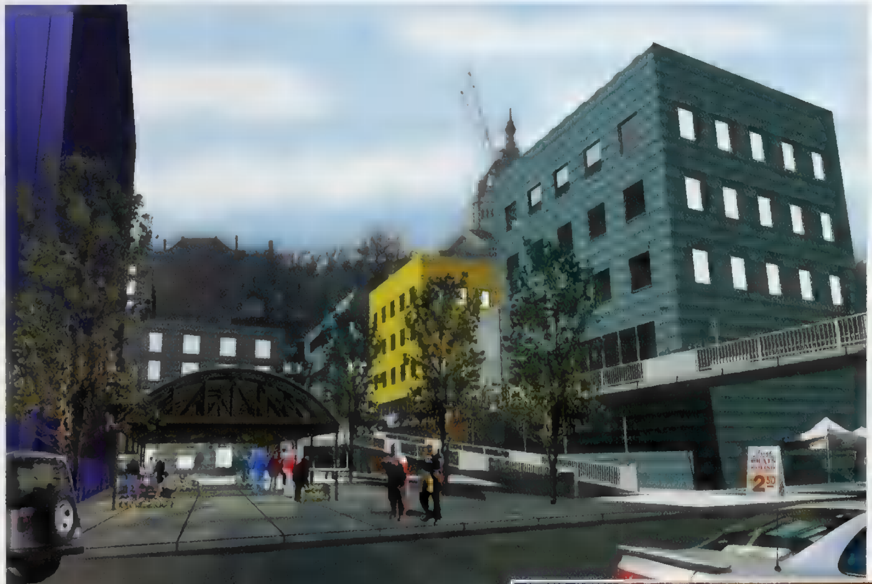
For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

his month, archrecord2 takes a cue from the rest of the magazine's coverage to pick up on the ork of James Dayton, who designed one of this month's Building Types Study projects. The esign profile below takes a look at his other work, and gives a glimpse into his life. In Live, ou can find a preview of an online gallery of art from a group called Bay Area Young Architects. s always, on the Web you'll also find Work, our career section, and Talk, a forum.



Headhouse competition, St. Paul, 2002
Dayton won a competition sponsored by the St. Paul Riverfront Corporation to transform a portion of the Mississippi River riverfront with a mix of retail, restaurants, and an indoor market. Actual construction is uncertain.

DESIGN

lot just another Minnesota Dayton

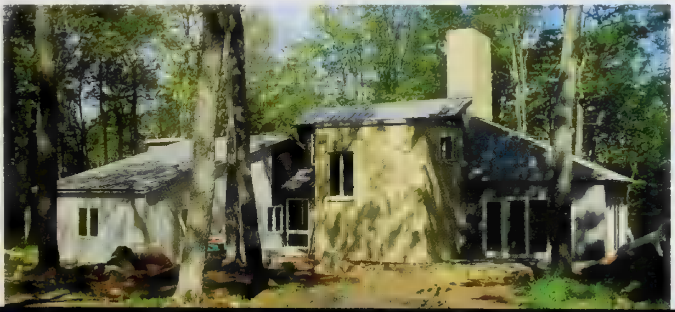
linneapolis architect Jim Dayton, AIA, is from one of the best-nown Minnesota families, but he downplays his family connecons and does not plan to do much work for relatives. "That's a lippery slope," he says, cautiously.

Dayton's father's cousin is U.S. Senator Mark Dayton (D-Minn.), and the architect is the great-great-grandson of George Draper Dayton, who in 1902 opened Goodfellow's Dry Goods, which became Dayton's department stores. The Daytons started Target as a discount retailer in the 1960s, and the Dayton ludson Corporation was recently renamed Target Corporation. ayton's father was the last of the Daytons to work for the retailer.

While Jim Dayton had no interest in working for the retail ompany, he was considering a career in advertising before earning his B.A. in Architecture from Yale, in 1987, and M.Arch. from the University of irginia, in 1991. "I think there are some real connections between architecure, retail, and advertising," Dayton says. "Part of the business of architecture s to convince someone, if you want to do something in your own language of esign. You have to convince them that these leaps of faith are worth taking, as n retail and advertising."

Upon graduation in 1991, Dayton headed west to Los Angeles and interiewed with Frank Gehry, who had just received the commission for the uggenheim Bilbao and needed to add employees to his 30-person office. I was a warm body showing up with a portfolio," says Dayton. "But it was an ncredible opportunity and experience to be part of [Gehry's] professional uccess. He's basically like a father figure to me. talk to him all the time. I feel quite fortunate that I lo have this relationship with him."

After five years working on projects including Disney Concert Hall, Jim and his wife, Megan, also n architect, moved to Minneapolis because they wanted to raise a family there rather than in Los



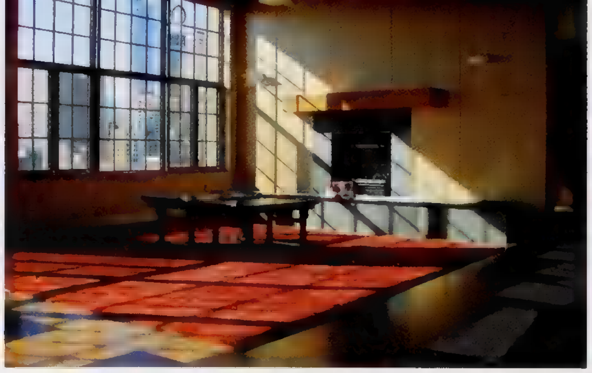
Vacation house, Madeline Island, Wisconsin, 2001
The forms of the cottage, overlooking Lake Superior, relate to the agrarian architecture of northern Wisconsin—recalling farm outbuildings and barns.

(continued from previous page) Angeles (they now have two children). Dayton also wanted the chance to start his own practice, James Dayton Design, which he did in 1997, after a year with Meyer, Scherer & Rockcastle. Before he even had his own staff and computers, Dayton was given the commission to design a new home for the Minnetonka Arts Center in Wayzata, Minnesota (page 144). "I couldn't ask for a better project," Dayton says of the $5.8 million building for the nonprofit organization that provides courses in the visual arts and crafts. He also curated the first art exhibition in the new building.

Gehry definitely made an impression on Dayton, and it's apparent in the Minnesota architect's work. Dayton explores the manipulation of forms and curves, and the juxtaposition of materials, including woods and metals, in his projects. He says he finds Gehry's urban work to be "a complex collage of elements. I find that very intriguing. I think of it as a language—of looking at materiality, plasticity, and industrial materials in new ways."

Dayton, who now has a six-person practice, employed a number of the lessons he gained from Gehry in his first completed house—a vacation cottage on Madeline Island, Wisconsin—and in a competition-winning entry for the St. Paul waterfront (both on previous page). He is now beginning design on his most ambitious project, converting a 1916 five-story Minneapolis warehouse building across from his current office into 46 loft condos. The project, three times larger than the arts center in square footage, may include a new, larger office for Dayton. *John E. Czarnecki, Assoc. AIA*

Go to architecturalrecord.com/archrecord2 for more on other emerging architects, and to submit your own work.



Farley Loft, Minneapolis, 2002

Dayton designed a contemporary loft—a home for a client who collects Asian antiques—in a former utility building of the General Mills plant in downtown.

Crowne Plaza Hotel, suburban Minneapolis, 2004

Currently in design development, a former Holiday Inn will be fully transformed into a more contemporary, 256-room Crowne Plaza business hotel with a new entrance and metal exterior finishes.

They left their art in San Francisco

ay Area Young Architects, or BAYA for short, is a ommittee of the San Francisco chapter of the IA (SFAIA) and other chapters around the San rancisco Bay and Oakland areas. The group conects young architects through social events and areer development services, and it serves as an utlet for its members' creative talents—at least or those talents that don't find expression in work.

For the latter, BAYA has organized a yearly art xhibition called *In_Sight On_Site*, which was held his year in the SFAIA gallery.

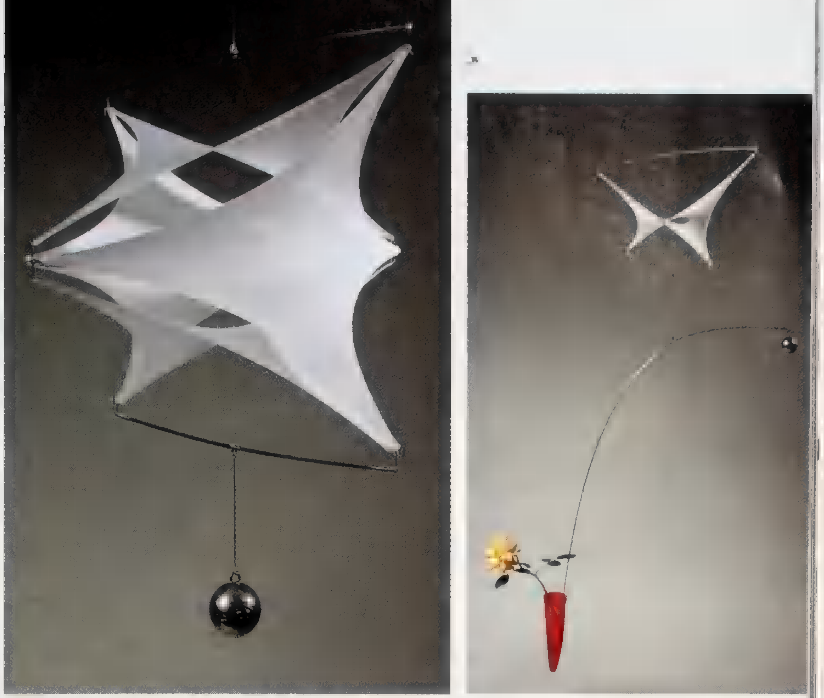
Twenty-seven architects and designers subnitted work for this year's show, for a total of about 0 pieces, according to Douglas Smith, Assoc. AIA. mith is associate director designate of the SFAIA nd worked to coordinate the event, which opened n November 4.

"There's quite a range of pieces," Smith said, from furniture and mobiles to painting, drawing, ixed media, photography, models, and sculptures."

Some of the pieces drew specifically on the rtists' experience as architects, such as the tenile fabric mobiles submitted by Soo-Hwa Yuan, hich were inspired by his work on a similarly structured design for a theater set. Others, like Sabrina Lupero's *Sidewalks of Rome* series of photographs, highlighted the designers' other artistic talents. Lupero shot the images while she was studying architecture in Spain and Italy. In her entry statement, she wrote that the she and her camera "maintain an oscillating relationship between the visceral and architectural components of these places."

Only one artist's work appears on this page, but a complete gallery documenting the entries to *In_Sight On_Site* can be found in the LIVE section of the archrecord2 site on the Web. Now that the show has closed, archrecord2 is the only place these works can be seen. *Kevin Lerner*

Go to *architecturalrecord.com/archrecord2* for more, and for other architecture lifestyle stories.



Soo-Hwa Yuan entered these mobiles in the Bay Area Young Architects' 2002 art exhibition, *In_Sight On_Site*. The works were inspired by his work on a tensile fabric structure for a theatrical set design.

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No island is an island: A developer shows how to build with nature

Critique

By Michael Sorkin

The barrier islands off the Carolina coast are at once fragile and protective. Home to an amazing diversity of environments, ranging from ocean to dunes to maritime forests to salt and freshwater wetlands, these islands serve as habitat for a stunning range of ecosystems and a singular variety of species. Their beauty is compelling.

And susceptible. Hurricane Hugo—which ravaged the coast in 1989—was an equal opportunity destroyer, devastating both human and natural habitats with sublime thoroughness. Both, however, have revived themselves remarkably. The islands teem with alligators and deer, sawgrass, pine, and palmetto. And the houses that crowd the coast have also returned, jostling for views along the strand.

Resistance to this overbuilding of the islands is longstanding and based in several arguments. Critics challenge the crazy economics of insurance and public subsidy, the ravaging of pristine landscapes, the privatization of an asset that might be carefully shared, and the propriety of settlements in areas that participate with such regularity in a cycle of destruction and rebirth. These are the same arguments reflected in current debates about the suppression of fires in the national forests in the face of the otherwise natural rhythm of burning and renewal.

Solutions to the question of development of the barrier islands range from the default—the kind of rampant growth that has fouled places like Hilton Head—to their preservation as purely natural habitats. Each of these extremes has an ethical vector, an argument about the highest and best use of a scarce resource. And each represents a proposition about the meaning of our inhabitation on the land. The natural environment is the ultimate utopia, a realm characterized by the moral indifference of its laws and the totality of its system. This view is representative of environmental thinking in general, the idea that our moral position in the world derives—in great measure—from the way in which we define our relationship to the sum of forces in the cosmos and by our willingness to subsume our Promethean impulses to a more humble and collaborative view.

This consciousness has begun to produce new patterns of architecture and settlement, and this "green" impulse is legible in a variety of incarnations along the islands. One of the more remarkable of these is Dewees Island, just north of Charleston, a place that proposes a kind of "third way," intermediate between development and preservation. The project is the brainchild of John Knott, a charismatic builder who, uniquely, gives the lie to the oxymoron of the "enlightened developer." Over the past 10 years, he has transformed Dewees into a model for the possibility of building communities with a light lie on the land, simultaneously evoking both the promise and difficulties of constructing truly sustainable settlements.

Like other gated communities, Dewees is enabled by a series of restrictions and by a population that shares in their intent. Construction is confined to 4 percent of the island's footprint, leaving the rest in its natural state. Each of the 150 lots in the site plan is governed by a code that allows no more than 7,500 square feet to be developed (including the footprint of the house, driveway, septics, cisterns, etc.) and caps the total size of houses at 5,000 square feet. The code sets out a long series of extremely sensible environmental parameters for construction, and designs are vetted by a compliance committee for conformity. No cars are permitted on the island (a ferry shuttles residents and guests back and forth), and the main medium of transportation is golf carts, restricted to a top speed of 17 mph. Roads are graded sand, and existing flora and fauna are rigorously protected. To reinforce the vibe, the development assumes a gently didactic role, abounding with small cautionary and explanatory labels ("boardwalks protect our dunes").

Houses on Dewees Island (left) are pulled away from the shore and preserve native flora. Development in Noisette will encompass existing communities such as Century Oaks (below).

The results are very different from the typical coastal pattern. Houses are pulled back from the shoreline and roadways and are largely concealed by native trees, despite the height generated by the need to raise each structure between 15 and 20 feet above sea level. The experience of the island thus centers predominantly on its natural features, which are scrupulously protected. Dewees's architecture is largely Low Country generic in flavor, and modest, rather than distinguished, in character (notable exceptions are a pair of lovely houses built by Charleston architect Whitney Powers).

The island's harmonies are also

Contributing editor Michael Sorkin is a practicing architect and planner in New York City.

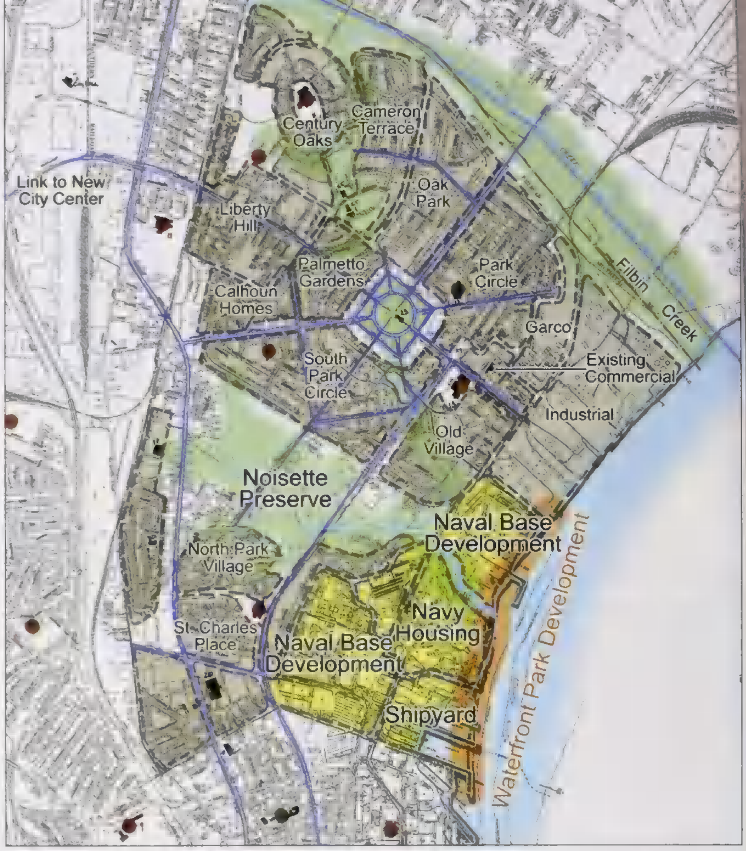
produced by the homogeneity of its inhabitants, people of means with a prior commitment to at least basic principles of sustainability. Successful communities always grow from such commonality of interests, and the question to be asked about enclaves like Dewees is not one about shared values but about those excluded. Knott is dismissive of cavils about the lack of social diversity in the midst of the stunning biodiversity, and he is probably right. A tiny resort island cannot be expected to do the work of transforming an entire culture predicated on distinctions of wealth and class. And working on environmental amelioration is everybody's business.

My own initial skepticism about Knott's project dissipated after watching an encounter between him and two bubbas on the Dewees ferry. One of them approached Knott to ask if he could help out a friend of his, the coach for a local baseball club who was planning to move to greener economic pastures in Florida. The coach's day job was laying out golf courses, and the man proposed to Knott that Dewees would be well served by the construction of a few putting greens to give the men of the island an alternative to fishing and "watching the women swim." Although the Dewees ethos precludes a golf course (the landscape equivalent of an SUV), Knott heard the man out and suggested that he would be happy to talk to his friend if he understood that he'd have to build his green using native species, grown without fertilizer. When the man and his colleague registered perplexity at the latter requirement, Knott explained with exactitude and without a hint of patronizing the negative effects of fertilizer on the environment. The men were clearly convinced, and Knott (whose early Jesuit education reappears in both his environmental fervor and love of argument) had begun another pair on the road to conversion.

But the real proof of Knott's commitment to social as well as environmental justice is made very clear in his current project for the transformation of the city of North Charleston. The development, called Noisette after an 18th-century French botanist banished from Charleston proper for his marriage to a Haitian woman, encompasses both the abandoned Charleston Navy Yard and a series of neighborhoods whose population is 68 percent African-American and largely poor. Knott has partnered with the North Charleston municipality, and planning encompasses 3,000 acres at an estimated eventual cost of over $1 billion. This is projected to yield 10,000 new and rehabilitated housing units, 3 to 5 million square feet of commercial space, rehabilitation of 13 schools, several new museums, and the creation of a large environmental reserve.

Evidence of the seriousness of the commitment is already visible at a variety of scales. Work has been completed on the conversion of a tiny house to a high green standard to serve as an educational center and model for work to come. Tax-increment financing is in place for major infrastructural improvements throughout the site. A nonprofit sustainability institute has been created. A waterfront park is under construction. The city has overlaid a special environmental district on the whole area, and Mayor Keith Summey has called for Noisette to be "a national benchmark for smart growth." Most remarkably, the city has promulgated and publicized a "pledge" that commits it "to practice 'no tolerance' for gentrification."

The fascination of Noisette springs both from these sterling intentions and from the amazing character and pattern of the site itself. In relatively small compass, Noisette holds one of the most concentrated collections of model communities I have ever encountered, places created with deep deliberation on the relationship of architectural form and social life. While these are not necessarily models to be emulated, they add tremendous complexity and depth to the project. Both happy and sad instances of neighborhood organization make an accidental heterotopia of wild diversity.



The master plan for Noisette in North Charleston, S.C., incorporates existing communities and offers an alternative to urban sprawl.

The range is stunning. Within the city's boundaries lie the scrupulous hierarchy and elegant architecture of officers' housing on the local naval base; the oppressive uniformities of public housing projects; the elegant dispositions of Park Circle, designed by the Olmsted brothers in 1904; the settlement of Liberty Hill, one of the first communities of freedmen after the Civil War; Century Oaks, a fantasy of tiny identical houses built in haste for workers during World War II; Cameron Terrace, a comfortable middle-class community of curved streets, green lawns, and brick rancheros; and a classic, if frayed, commercial main street, the very idyll of small-town America.

America has a special genius for the creation of such dreams of order and communality. The South is particularly rich in these fantasies, including the master narratives of the Old South and the Confederacy. And the fantasy abides, sustained by prodigies of exclusion. Just as the South romanced itself with comparisons to ancient Athens, the noble cavalier democracy was constructed (like that of Athens) on the backs of slaves.

Utopia, of course, is as much concerned with the construction of subjectivity as of buildings. Ironically, the one element still lacking in the vision is architecture; but this, one hopes, will come. Most important, the infrastructure of difference already present in North Charleston provides an extraordinary canvas for painting a portrait of 21st-century America as it ought to be: proud of its plurality, wedded to the celebration of nonoppressive diversity, concerned for the future of its natural environment, committed to the idea of generosity and security for all; and open to the new. This is a story I look forward to following closely. ■

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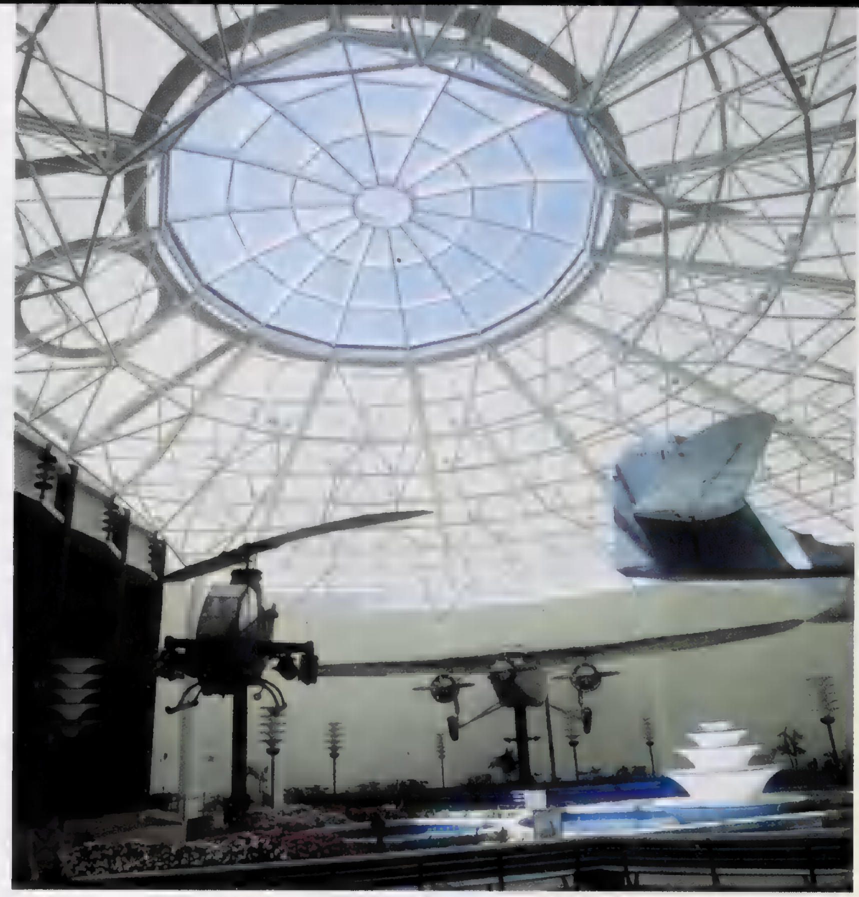

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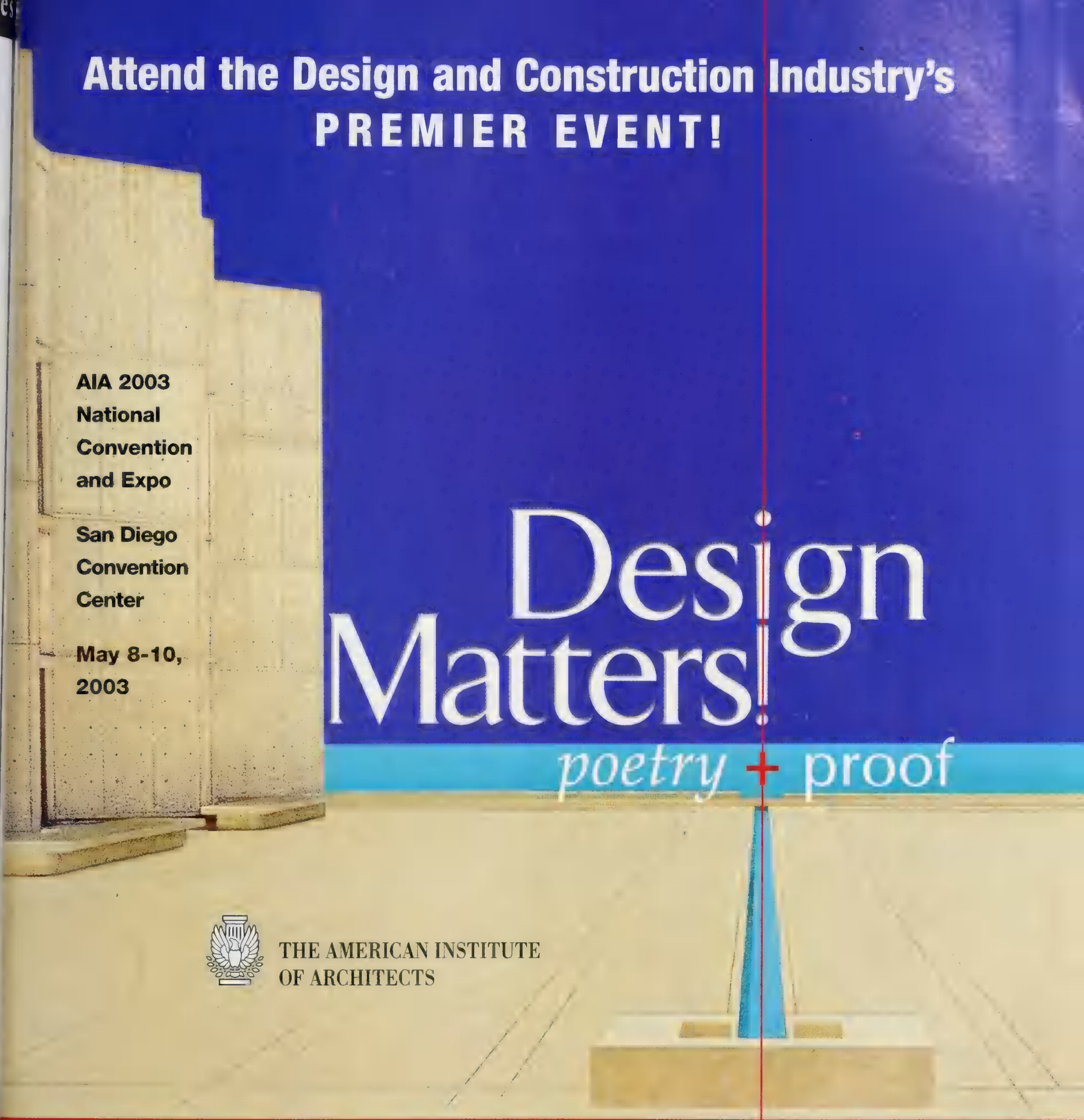

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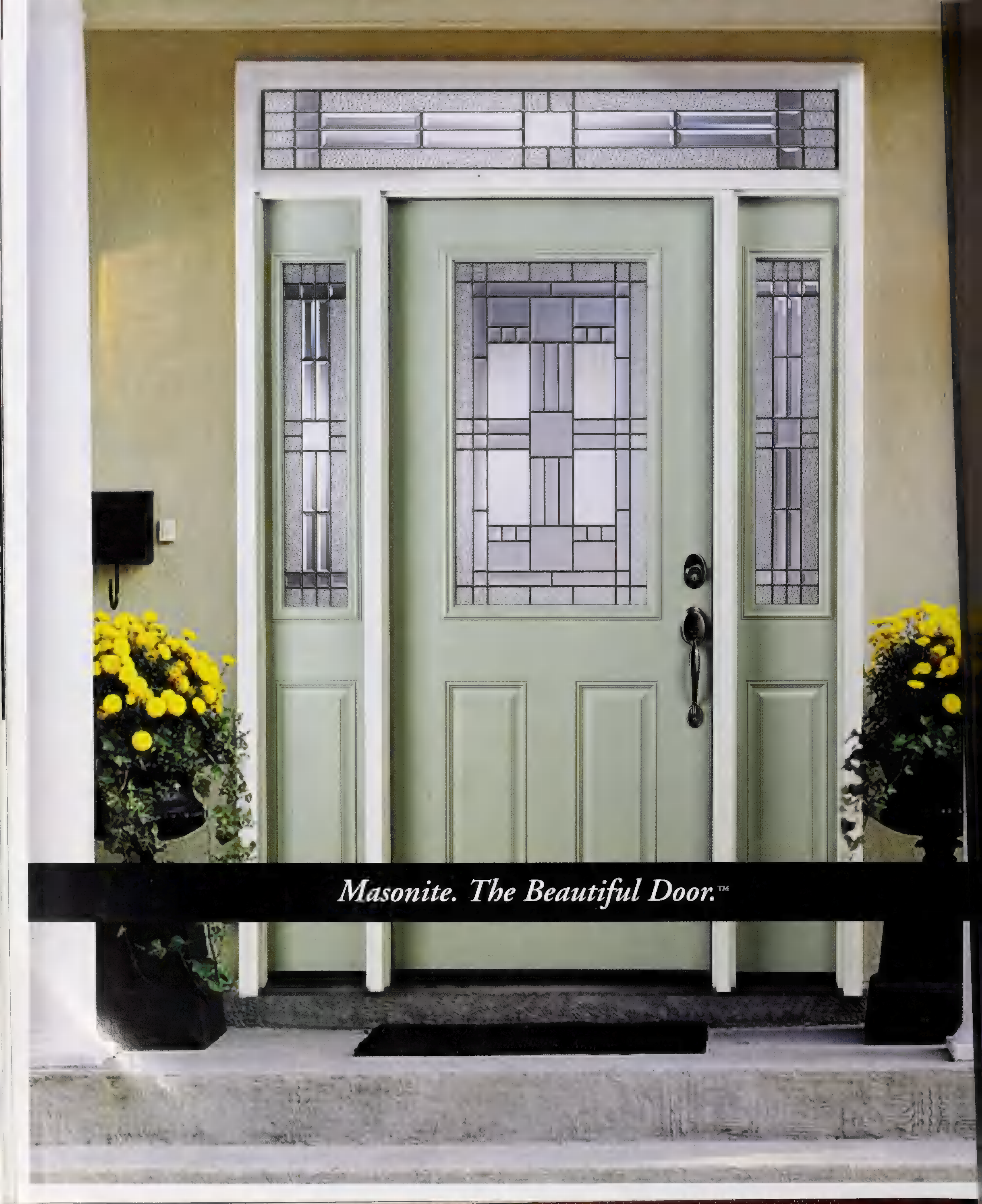
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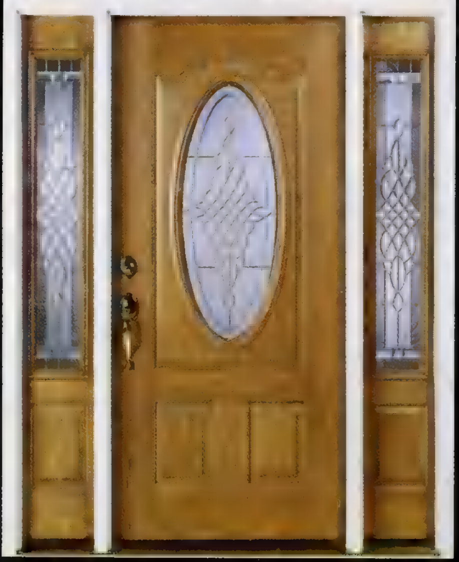

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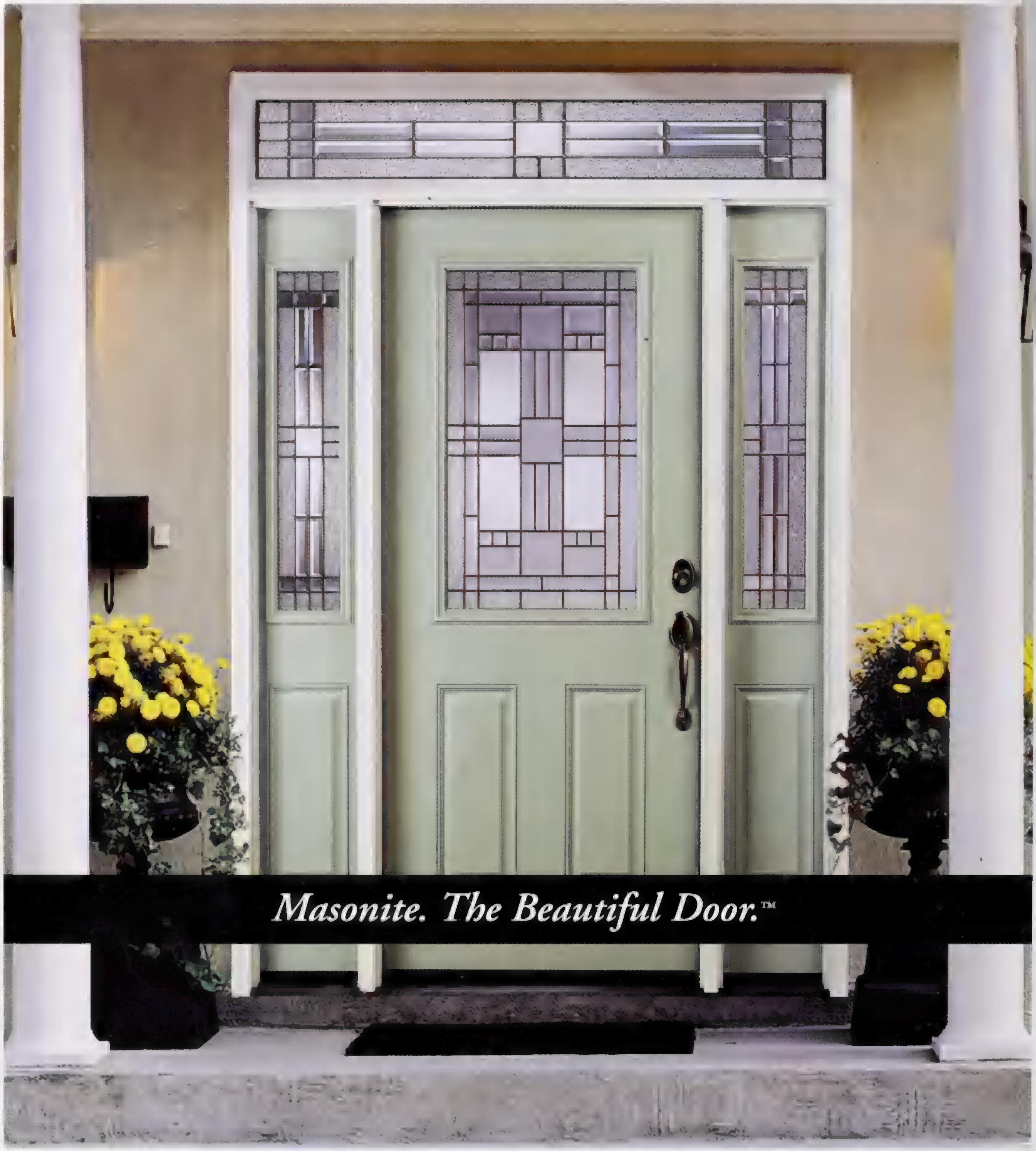

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Sudjic's *Next* brought the Venice Biennale back to earth, for better or worse

Exhibitions

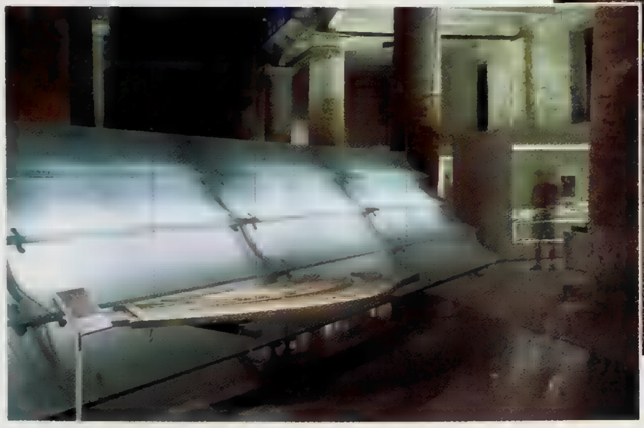
By Joseph Giovannini

Venice Biennale: *Next*. *Curated by Deyan Sudjic. At the Arsenale, Venice, Italy, from September 8 through November 3, 2002.*

Every two years the international architecture community takes its temperature at the Venice Biennale in a tribal convocation that cuts across national boundaries and continental divides. This year, even China made a strong appearance with highly sophisticated projects. But there is no such thing as a neutral Biennale. Each belongs to the eye, mind, and agenda of the appointed director, so Biennales register wide swings of direction as curatorial lenses change. Two years ago, Roman architect Massimiliano Fuksas curated *Less Aesthetics, More Ethics*, a gloriously messy show that emphasized the urban consequences of architecture and the creative instrumentality of the computer. Fuksas's sectional slice through the profession made it appear that the collective architectural imagination had migrated into the computer screen, never to return. The slice implied a concomitant generational shift, with the future belonging to the young maestros of the keyboard.

Deyan Sudjic, director of the 8th International Architecture Exhibition and editor in chief of *Domus*, took it all back this fall in *Next*, a Biennale that emphasized built and buildable projects and eschewed the often hallucinatory speculations that made the previous Biennale so provocative. Tellingly, one of the essays in the catalog, "The Shock of the Real," was illustrated with a massive, physically imposing concrete convention center by AMP Artengo Menis Pastrana now under construction on the Tenerife waterfront in the Canary Islands. Sudjic brought the Biennale back to earth with a wide-ranging selection of mostly large, sometimes monumental projects by established figures. Sudjic's was an establishment, trickle-down show, unlike Fuksas's trickle-up interpretation. The individual viewpoint of the Biennale director has become increasingly dominant as the critical mass of exhibitions has shifted from the national pavilions in the Giardini to the vast halls of the Arsenale, where the Venetian fleet was once built. Gradually, over the past decade, the magnificent brick-and-timber warehouses have been restored, so that now any show that fills the Arsenale necessarily exhibits more material than the small national pavilions. There were some strong individual shows in the Giardini (the American pavilion featured Max Protetch's popular exhibition of Ground Zero proposals), but the consistency allowed by

Joseph Giovannini is an architect in New York City and the architecture critic for New York *magazine.*



PHOTOGRAPHY: © PAUL RAFTERY/VIEW

The American Pavilion included a twisted steel member from the World Trade Center (top left). The main show at the Arsenale (above and left) was designed by John Pawson.

omniscience in the Arsenale makes the Giardini pavilions seem inchoate.

It takes the digestive stamina of an Olympic intellectual to venture into the vast Arsenale, but Sudjic provided enzymatic subdivisions—housing, museums, education, communications, and so on—that broke down the sheer mass of projects. The exhibition kicked off with a Case Study House–type development by Asian architects (including Shigeru Ban and Young Ho Chang) next to the Great Wall: The so-called "commune" resembles a suburban enclave. After this initial surprise, familiar names rolled by—Peter Eisenman presented his vast, almost geological City of Culture in Santiago de Compostela, Spain, and Thom Mayne exhibited several large-scale government projects. The next generation also made a strong appearance: From Los Angeles, Michael Maltzan presented a perceptually complex Children's Museum in Pasadena, and Michele Saee, the Publicis Drugstore, in Paris, where a storm of glass engulfs a bland office structure. One of the standouts was the Hellenic World Museum, in Athens—a complex of curvilinear plans swirling up from the ground—by Anamorphosis Architects of Athens.

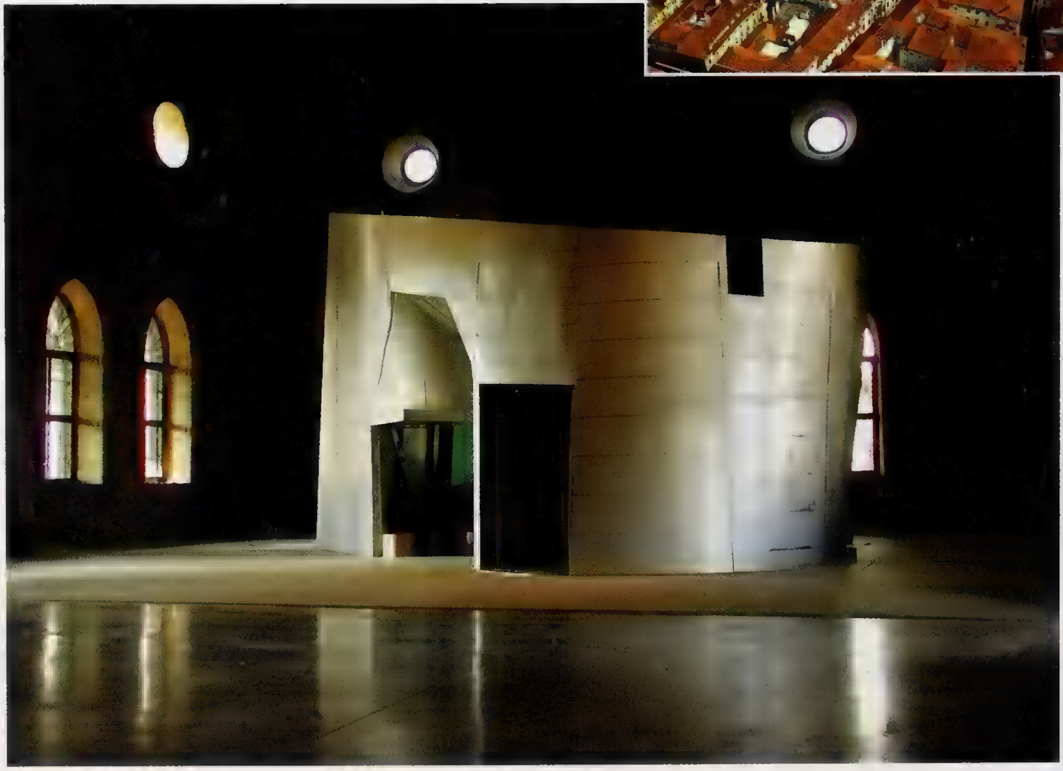
UNLIKE FUKSAS'S TRICKLE-UP INTERPRETATION, SUDJIC'S BIENNALE WAS AN ESTABLISHMENT, TRICKLE-DOWN SHOW.

For anyone wanting a quick summary of who's who and what's where at this moment in architectural time, the exhibition provided a sweeping synopsis. But because of the show's position on buildability, it added up to an antidote to the 7th Biennale and the computer, rather than one that stakes out an intellectual territory beyond reality architecture. The agnosticism provoked intellectual hunger. What the buildings displayed as a whole was a driving trend to competitive aesthetic invention, tinged perhaps with a complexity that is an aftereffect both of Bilbao and the fact that computers have been assimilated into practice. Avant-garde figures such as Eisenman, Mayne, and Daniel Libeskind, considered marginal a decade ago, now dominate the mainstream.

The formal inventiveness of the designs suffered from the elegance of John Pawson's very white, Minimalist installation, which undercut the design premise of many projects based on the particular, individual, and accidental. With the overcontrolled regularity of a Calvin Klein showroom, the show turned differences among the projects into similarities and eliminated any surprise or sense of rawness. The emphasis on buildability had already demoted the importance of emerging theoretical and social speculations, but the cool systemization of the presentation, combined with the categorical containment of each section and the projects' large scale, conspired to preclude ideas incubating in more modest projects by emerging thinkers. Architecture's more fragile, emergent ideas could hardly hold their own in this display of maximum splendor. The 8th proved a beautiful but surprisingly conservative Biennale.

Steven Holl Architetto. City to Desert: Density in the Landscape. *Organized by Abaco Architettura. At the Basilica Palladiana, Vicenza, Italy. September 5 through December 1, 2002.*

While hundreds of architects from around the world shared the stage at the Biennale, Steven Holl had Palladio's Basilica in nearby Vicenza all to himself. Continuing a program that had earlier brought Toyo Ito, Alvaro Siza, Tadao Ando, and others to Vicenza, Holl took over the magnificent top-floor space of the town hall that Palladio reworked in the mid-16th century. (Palladio called it a "basilica," but it never was a religiou building.) While Palladio wrapped a Neoclassical structure around a Gothic one, Holl erected a shiny, Modern pavilion inside it. Made of 3 digitally prefabricated aluminum pieces, the quirky little structure anchored an exhibition that include drawings, models, and photographs 16 projects Holl has designed for places either on the edge of cities (Schipol New Town, in Holland, for example, and Dallas Spiroid Sectors) or in their center (the AGB Library, in Berlin; Kiasma, in Helsinki, and others). The metal pavilion is actually the twin of a house Holl is building on a 50-acre desert mesa in Abique, New Mexico. The one in New Mexico, called the "Turbulence House," will be solar powered and emerge from the ground as if it were the tip of land-locked iceberg. The one erected for the Vicenza show will be moved to a sculpture park in Schio, Italy. *Clifford A. Pearson*



A prefabricated aluminum pavilion (below) was the star of the Holl exhibition at the Basilica Palladiana in Vicenza (right).

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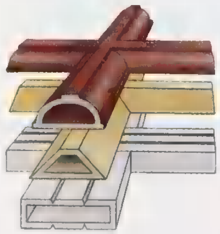

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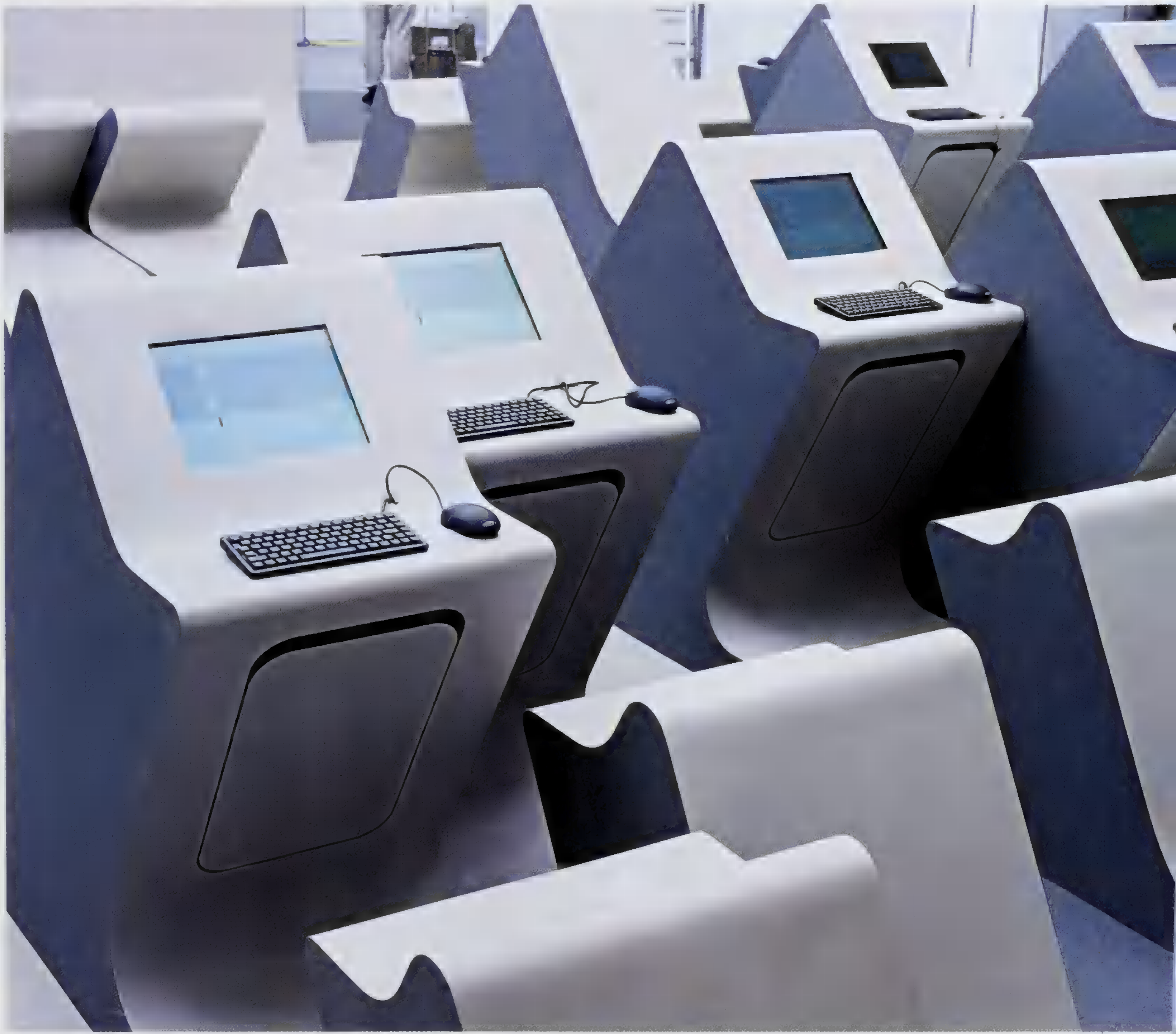
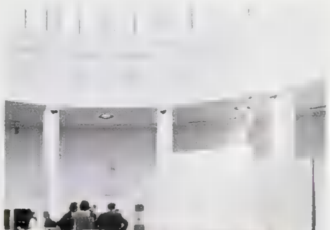


By Raul Barreneche

A groovy lounge makes waves in Berlin

Imagine architects and planners socializing amicably. What's more, imagine an architect at a computer while a planner lounges leisurely over the back of his workstation, or vice versa. Such blissful commingling really happened last July in an installation at the Berlin Messe, where the Union Internationale des Architectes (UIA) held their XXI World Congress while PlanCom 2002, an international planning fair, took place in an adjoining hall. At the junction of the two wings, beneath a skylit rotunda in the Nazi-era landmark, delegates from both trade shows and disciplines gathered to relax and to preview a new interactive design tool created by the online database Stylepark. The German company hired the young Berlin architect Jürgen Mayer H.—the dangling letter is his badge of distinction from so many other German architects named Mayer—to design an installation in the rotunda integrating lounge furniture, a bar, computer workstations, and a projection screen. Mayer H. created an undulating landscape that blurs the lines between functions while it tries to do away with the physical seams between surfaces.



PHOTOGRAPHY: © UWE WALTER/J. MAYER H.

The illusion of a seamless surface from which fluid profiles ebb and flow vertically is just that: an illusion. In reality, Mayer H. laid a linoleum floor and populated it with sinuous solids that work as lounging surfaces, computer stations, or both, with storage inside. There is also a bar and a projection-screen wall. The wavy forms, roughly 2 feet wide and of varying lengths, were constructed of MDF frames covered in plywood sheets. The tops are clad in linoleum that closely matches the floor; the sides are painted gray to create abstract, high-contrast "shadows." Mayer H.'s visual sleight of hand suggests linoleum shavings from the ground plane pushed up in shifting fields.

Mayer H. didn't make a single construction drawing: The detailed computer models from which he generated the design were sent via e-mail to the manufacturer, Performa, in southern Germany. The fabricator then fed the data to computer-guided milling machines that cut the profiles from MDF according to Mayer H.'s designs. Like the output, the construction was seamless from design to construction.

The trade fairs in Berlin are long over, but Mayer H.'s lounge may soon reappear in a new "constellation." A well-known product designer is interested in displaying his wares on it at next year's Milan furniture fair, and a design museum may also host it. (The architect doesn't want to name names just yet.) "We really want to have it travel," says Mayer H. "It's an idea of these things being frozen but then 'remelting' or being reused in different constellations." ■

The installation in the rotunda of Berlin Messe, a convention hall, integrated lounge furniture (below), a bar, computer workstations, and a projection screen (previous page).

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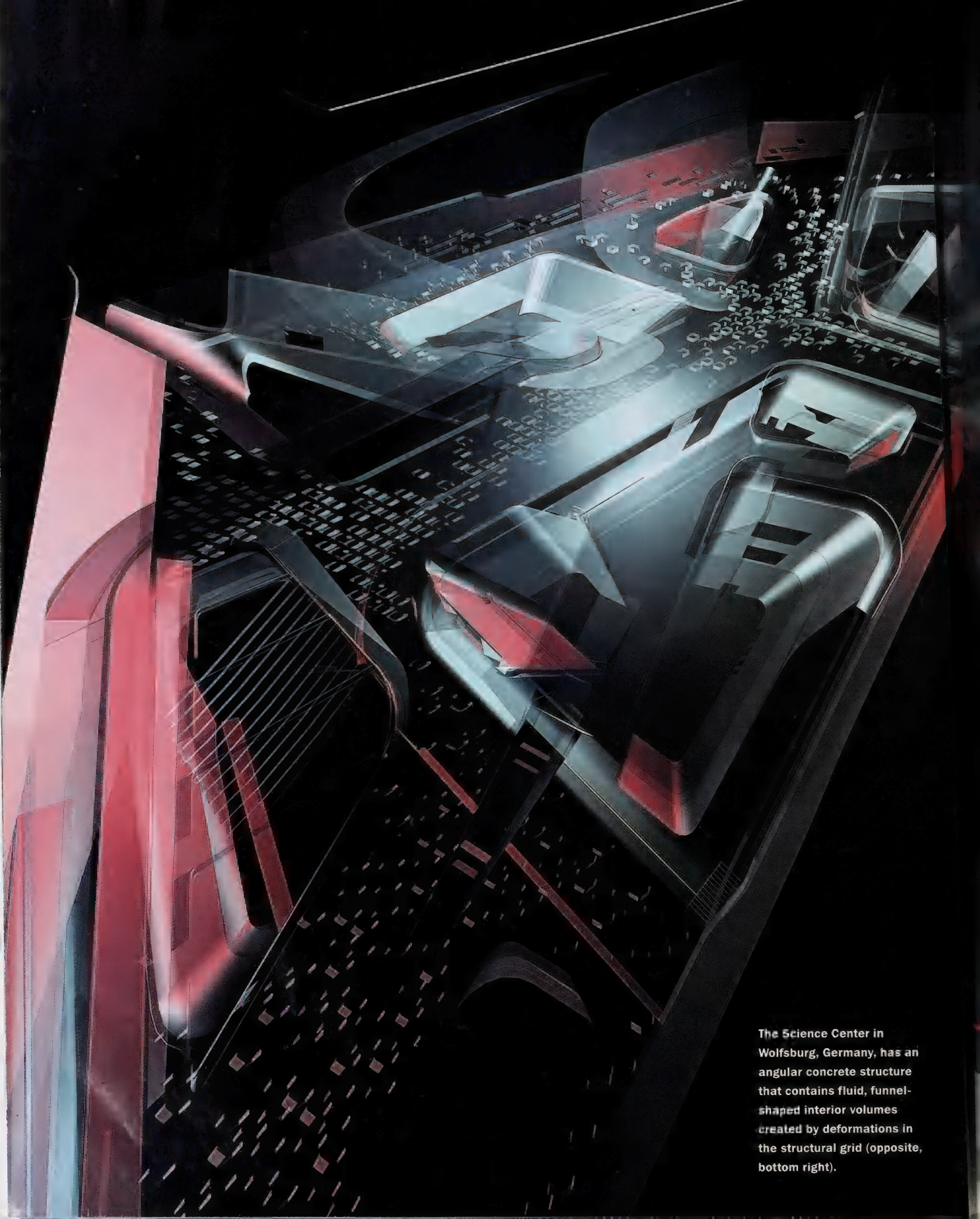


The Science Center in Wolfsburg, Germany, has an angular concrete structure that contains fluid, funnel-shaped interior volumes created by deformations in the structural grid (opposite, bottom right).

By Raul A. Barreneche

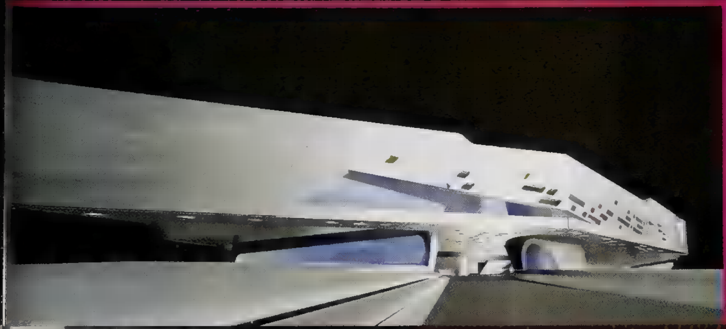
Although she bristles at the label and says she doesn't think of herself as a "woman architect," Zaha Hadid is the best known, most important female architect in practice today, perhaps in history.

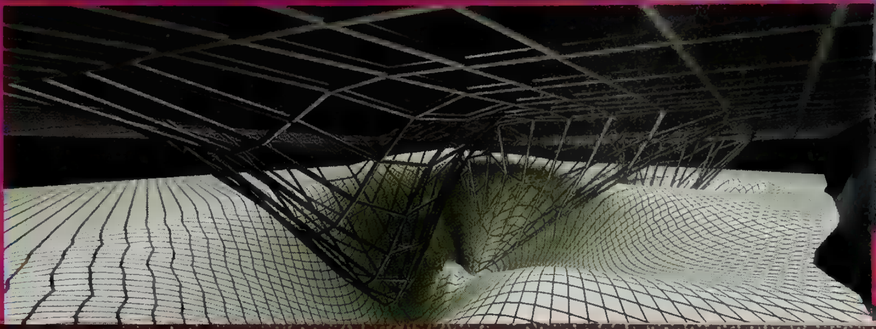
Zaha Hadid prepares for mainstream success

After decades at the edge, her new high-profile buildings prove that she's no paper architect

Her inventive, highly idiosyncratic work, not to mention her irascible personality, have been grabbing headlines for two decades, since her 1983 design for a restaurant atop the Peak in Hong Kong instantly put her on the architectural map. Since then, legions of devoted fans (some might call them groupies) and as many detractors have closely watched the well-documented ups and downs of her career. Her supporters cheered when—gasp—she finally built a building, a fire station at the Vitra campus in Germany in 1993. They shared her outrage when the plum commission for the Cardiff Bay Opera House, which she won twice in competition, was rescinded in 1996 amid a well-publicized political firestorm. Years later, the debacle still leaves Hadid with a bitter taste. Skeptics, meanwhile, (continued on page 78)

Contributing editor Raul A. Barreneche is currently at work on a new book about tropical Modernism, to be published next fall.





A Grand Leap:
The Innsbruck Ski Jump

When asked if she skis, Zaha Hadid winces and is soon reminiscing about basking on the warm beaches of Beirut and Baghdad. Though she's not a skier, it's hard to imagine a project better suited to her talents than a world-class ski jump. Her well-established affinity for sloping and dynamic forms makes her a natural to design a quintessential larger-than-life ramp: the Bergisel Ski Jump in Innsbruck, Austria.

In 1999, Hadid won a competition to replace an obsolete jump that had served in the 1964 and 1975 winter Olympics. The new course, solely for top-level competitors, needed to meet current international standards while integrating a public café and viewing terrace into its tower. The architect responded with a single and remarkably fluid gesture: a continuous, steel-clad "ribbon" that wraps the café, atop a 160-foot-high concrete tower, and pitches downward, becoming a 327-meter run that swoops into the steeply raked stadium, still rimmed by Olympic torches. In a gravity-defying feat—echoing the act of jumping—the café cantilevers 43 feet off the concrete core (which houses paired elevators for visitors and jumpers). The single, sweeping new shape—sometimes likened to a cobra or a high-heeled sandal—appears, much as Hadid had envisioned it, "to extend the topography of the slope."

Structurally, the challenge was to provide a precisely calibrated regulation curve with virtually no movement. The solution combines a massive cantilever (effectively a supertruss) for the café with a modified Vierendeel truss (a slanted 196-foot span with one moment connection at the top and another at the bottom) for the jump.

Making matters even trickier, the jump had to be completed in under a year, so that Innsbruck could remain a host site for a prestigious annual competition. (The course was ready on time, but the café remained under scaffolds, draped with a banner, for the maiden event last January.)

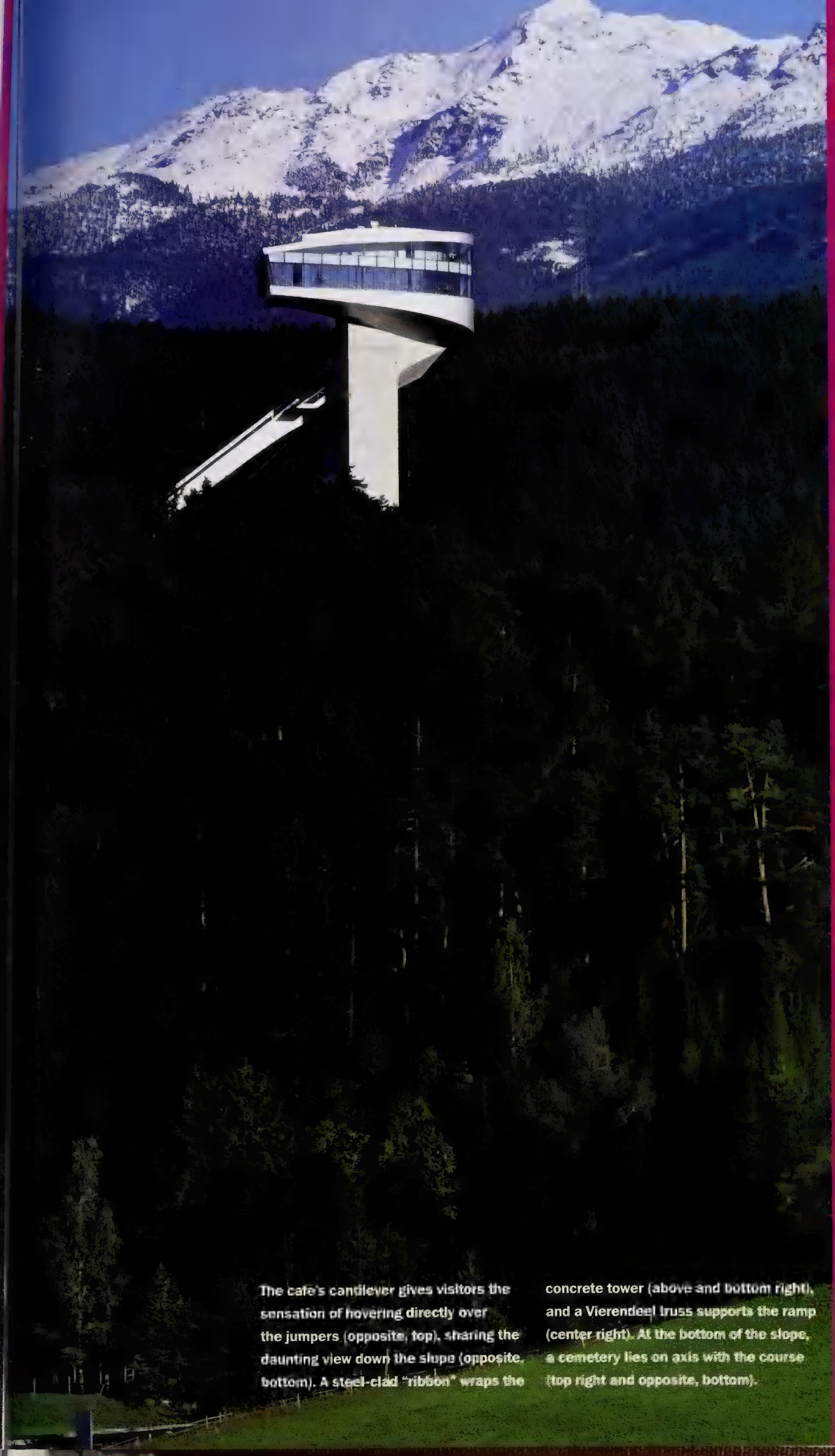
Unlike its predecessor, this course is usable year-round—with or without snow. In warm weather, competitors head down the enameled track and land on synthetic turf. But like its predecessor, the new jumpers' perch frames an eerie view of a local cemetery at the bottom of the hill, right on axis with the course.

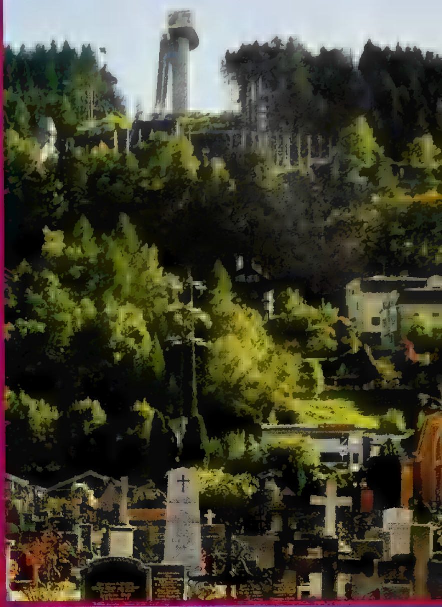
Visible along the main approaches from Germany and Italy, the tower has become a local landmark, with some 1,000 to 2,000 visitors ascending it daily. People have even asked to hold weddings up there. —*Sarah Amelar*

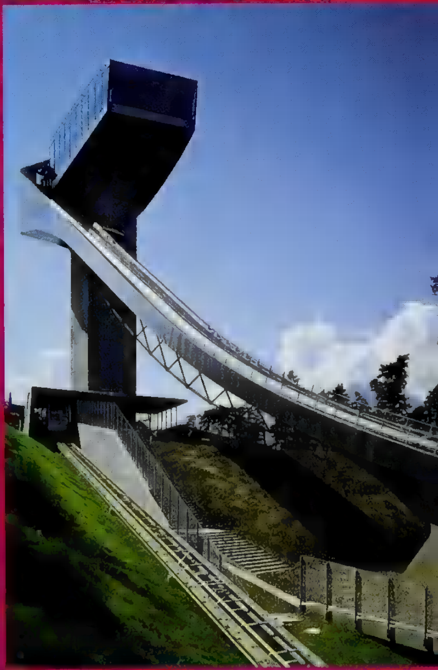
Credits

Architects: *Zaha Hadid, design principal; Jan Hübener, project architect; Matthias Frei, Cedric Libert, Markus Dochantschi, Garin O'Auvazian, Jim Heverin, Sylvia Forlati, Sara Noel Costa de Araujo, project team; Markus Dochantschi, Jan Hübener, Ed Gaskin, Eddie Can, Yosash Oster, Stanley Lau, Janne Westerman, competition team*

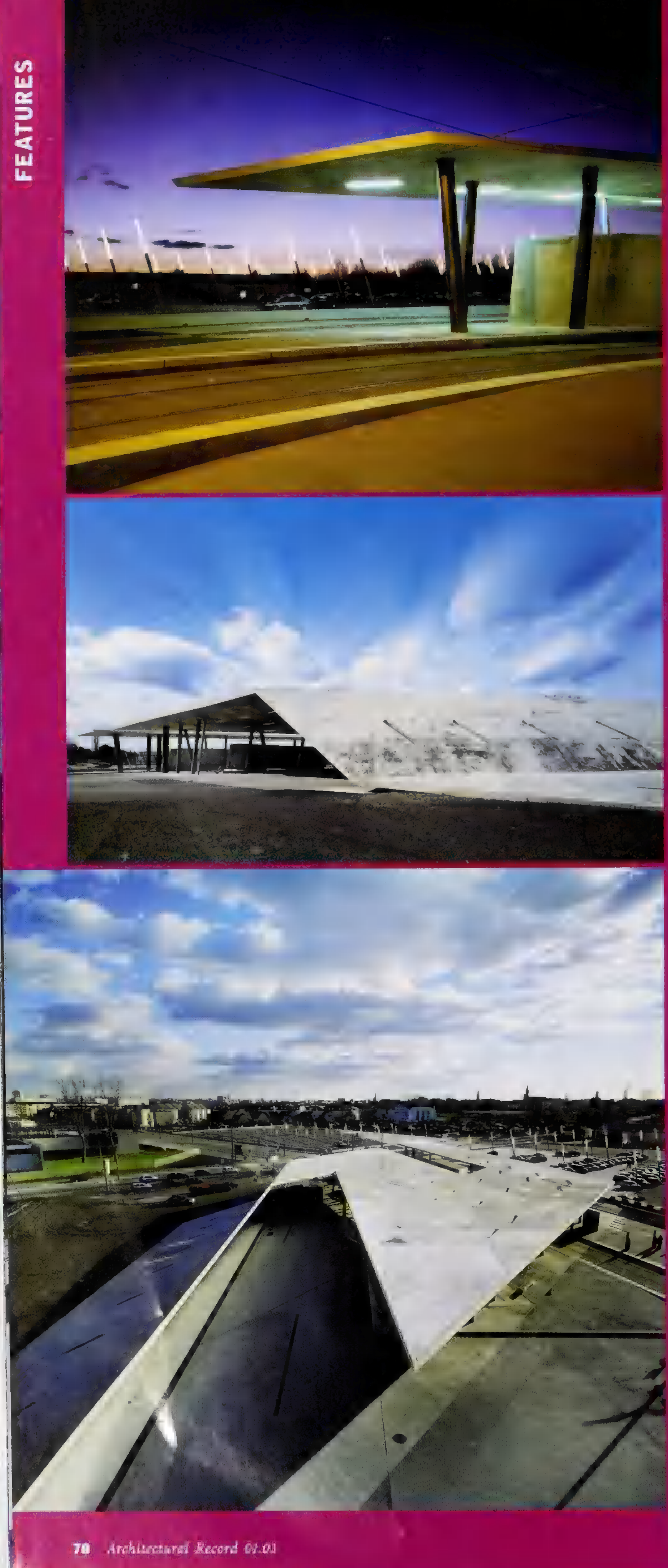
PHOTOGRAPHY: © ROLAND HALBE (THIS SPREAD), EXCEPT HELENE BINET (OPPOSITE, CENTER RIGHT)







The cafe's cantilever gives visitors the sensation of hovering directly over the jumpers (opposite, top), sharing the daunting view down the slope (opposite, bottom). A steel-clad "ribbon" wraps the concrete tower (above and bottom right), and a Vierendeel truss supports the ramp (center right). At the bottom of the slope, a cemetery lies on axis with the course (top right and opposite, bottom).



The car park and tram terminal Hoenheim-Nord, in Strasbourg, France, is a kinetic composition of angular light posts, columns, and a folded concrete canopy.

ZAHA HADID *(continued from page 75)* savored each ne project as an opportunity to deride her as a paper archite better suited to the drawing board than the construction sit They relished the paucity of Hadid's built work, encompassing more interiors, stage sets, and museum installations tha buildings, and seethed at the attention that elevated Hadid t something of rock-star status. The press, from professiona journals to Tina Brown's defunct *Talk*, built up Hadid grand persona by giving as much ink to her sometimes acerbic attitude and arresting attire as to her architecture.

One can already hear the exasperated groans anc grumbling sotto voce. "Another story about Zaha Hadid?" It's true: The London-based architect isn't exactly breaking news. What is novel is that 20 years after the Peak, Hadid is stil breaking new ground. She is shaking off the mantles of "controversial" and "diva" (and even "deconstructivist") that have followed her for so many years and settling into a period of more mainstream success. She is winning more complex and high-profile commissions on a seemingly regular schedule, most recently a large factory and offices for BMW in Leipzig, Germany, and an arts center in the shadow of Frank Lloyd Wright's Price Tower in Bartlesville, Oklahoma. Hadid is in top form these days, more secure in her position as one of the leading figures in architectural discourse.

"MY AMBITIONS HAVE NOT NECESSARILY SHIFTED, BUT I'M MUCH MORE STRATEGIC NOW."

This year, Hadid will unveil a series of major projects that will double her oeuvre of built work. The Rosenthal Center for Contemporary Art in Cincinnati, the first U.S. museum designed by a solo female architect, is set to open in May; a science center in Wolfsburg, Germany, and a ferry terminal in Salerno, Italy, will open in 2004. The next few years will see the completion of a large contemporary arts center in Rome; a sprawling master plan for a "science city" in Singapore; the BMW project; and, fingers crossed, a bridge in Abu Dhabi, the United Arab Emirates; a cinema in Barcelona; and a Guggenheim branch in Tokyo. Love her or hate her, Hadid's time has come. "It's definitely an interesting moment," admits Hadid. "I didn't really have a 20-year plan, but I always planned to change the system and ultimately do the 'theoretical project,' whatever it might be. My ambitions have not necessarily shifted, but now I understand what is achievable and not achievable. I'm much more strategic now."

Building bigger projects in more far-flung locations—and more of them—is, by necessity, changing the very nature of Hadid's practice. She now has projects on-site on three continents and 45 people spread out among three different spaces in her overcrowded London studio. The office is no longer just a hive of eager young theorists slaving

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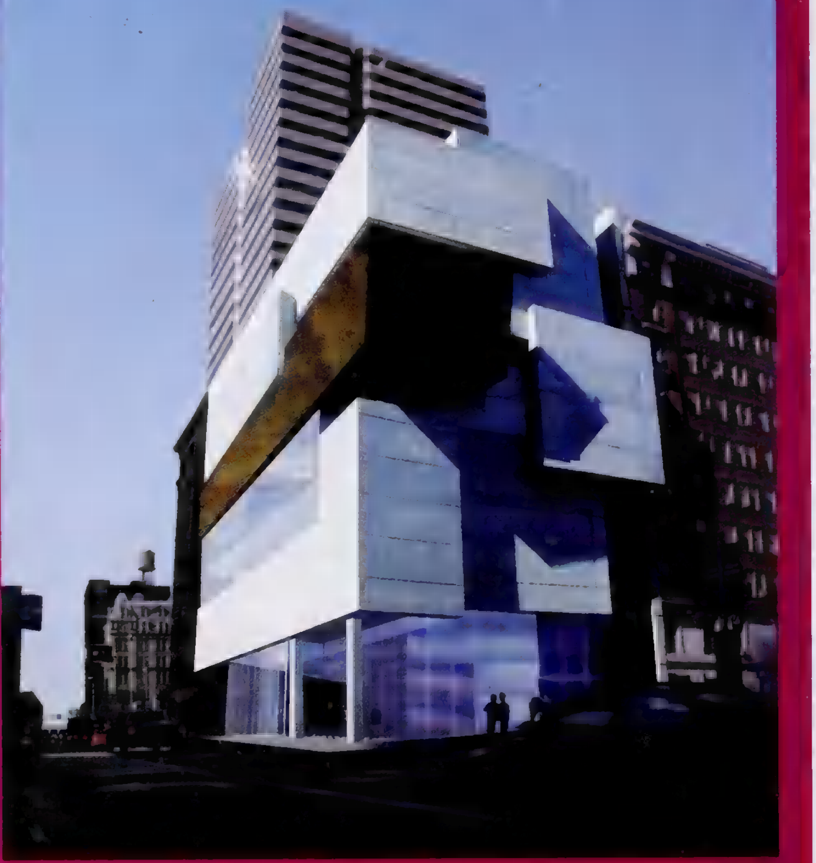


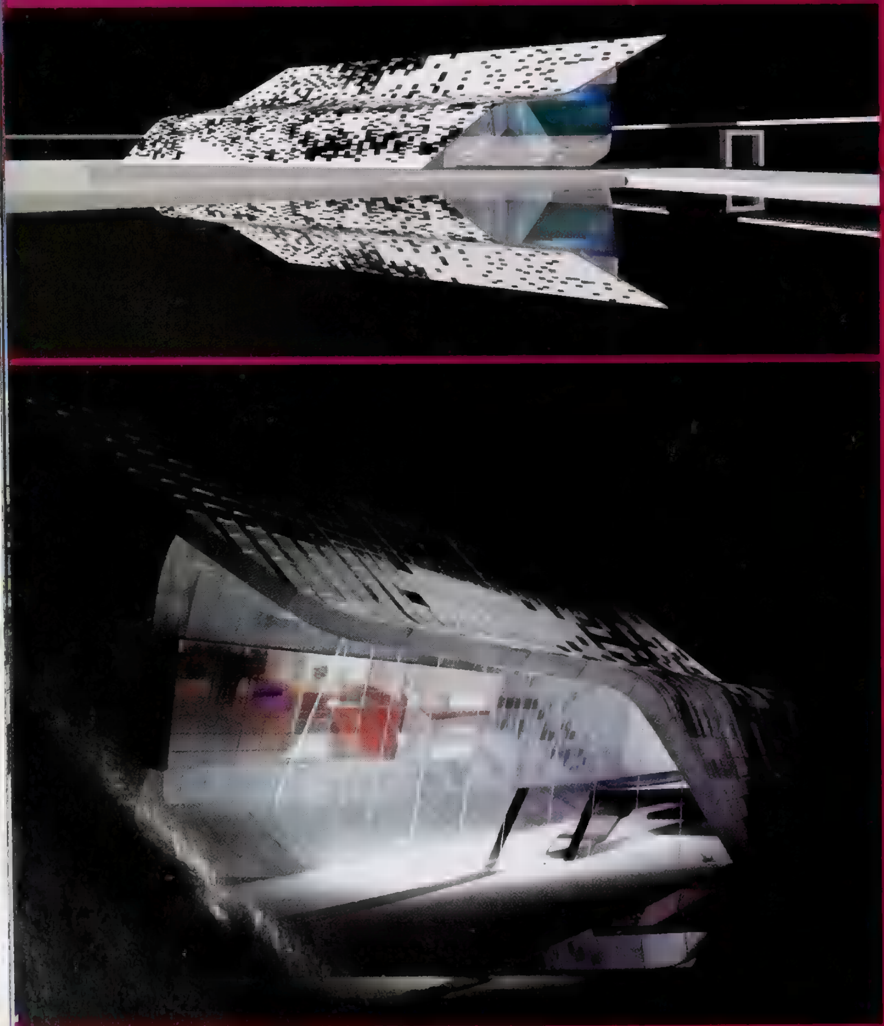
Hadid's first U.S. building, the Rosenthal Center for Contemporary Art (top) will open on a prominent corner in downtown Cincinnati in May.

over competition entries, but also of project managers a site supervisors. With a dizzying schedule of client meeti and site visits to Europe, Asia, the Middle East, a America, as well as teaching engagements and lectu around the world, Hadid has to learn to share the reins. S already does to a degree: In public and private, she is quick credit designers in the office with getting projects off t ground. She makes it clear that she is the leading creati force in the office, but by no means the only one.

Hadid's output is also evolving significantly. It's n just that she is finally building with some regularity an tackling larger projects in more widespread locales. Hadid most recent projects are giving discernable form to he longstanding ideas about fluidity, porousness, and the relationships between buildings and site. Implied motion an the seamless interplay of landscape and structure have bee important themes in her kinetic paintings and built work but it has been difficult to read the full impact of her ideas Her groundbreaking renderings are nebulous, and the buil projects have been too small to gauge the full forma and spatial possibilities of her design methods. Still, it's possible to read the sweeping lines of projects such as LF One, a pavilion for the Landesgartenschau in Weil am Rhein, Germany (1999), and an intermodal transit station she completed in Strasbourg, France, early last year as concretized motion generated from their distinct contexts, one pastoral, the other suburban. Her recent design for a new ski jump in Innsbruck (see related story, previous pages) is nothing if not motion incarnate, a single gestural line unfurled from the elevator tower in a strikingly clear condensation of athletic movement. Hadid's newest projects take her approach to making fluid connections between building and site to denser urban contexts. "People are starting to get it, though my projects have always been about the city, not just the object," she maintains.

THE OFFICE IS NO LONGER A HIVE OF YOUNG THEORISTS SLAVING OVER COMPETITION ENTRIES.

Her designs have much to offer as urbanistic proposals. The Rosenthal Center for Contemporary Art in Cincinnati will draw visitors along a flowing ramp she calls an "urban carpet." The ramp conceptually extends the street and the activity of the city into the building, winding its way



Hadid's winning design for a Tokyo branch of the Guggenheim Museum features a folded, pixelated enclosure rising from the edge of Tokyo Bay (bottom two).

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The Contemporary Arts Center in Rome (top two) is composed of fibrous, interlocking volumes.

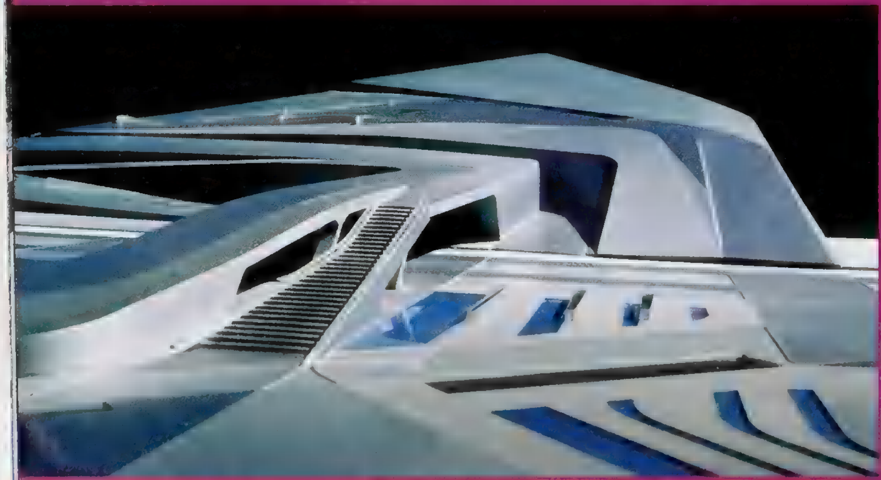
up through galleries within a kind of constructed indoor landscape. The "urban carpet" is both a formal device and a circulation system that ties together building and context. Her design for the Contemporary Arts Center in Rome makes sweeping, neo-Baroque architecture from interwoven paths of activities—force fields and trajectories, as Hadid describes them—resembling freeway overpasses or computer cables. Some of these paths trace existing movement through the dense urban site; others describe new intended paths of circulation through the complex of interlocking volumes. The result is a dynamic ensemble sensitively integrated into the city, generated not from a willful artist's brush, but from an urbanist's analysis of the city quarter.

For all its perceived avant-gardism, Hadid's architecture is remarkably democratic. That accessible, open attitude reflects the architect's formative years at London's Architectural Association (AA) in the 1970s, where she studied after receiving an undergraduate degree in mathematics from the University of Beirut. The AA, says Hadid, pushed her to investigate the social aspects of architecture rather than purely formal issues. As she told an interviewer from *The Cincinnati Enquirer* this fall, what appeals most to her about Modernism is that it "deals with contemporary life. One major aspect of modern life or modern architecture is the acknowledgement of civic space [and] public life." There is certainly a mathematical precision in Hadid's work that reflects her previous academic training. But architecture has always been her goal. In that same interview, Hadid explained that she "always wanted to become an architect [from] the time I was 11 years old," before she even knew what "a person who does projects on buildings" was called.

> **FOR ALL OF ITS PERCEIVED AVANT-GARDISM, HADID'S WORK IS REMARKABLY DEMOCRATIC.**

The Vista Master Plan in Singapore takes her approach to urban space one step further. Her plan covers 190 hectares with mixed-use activities and transportation infrastructure to serve 50,000 residents and 70,000 workers near the center of the city. Rather than segregating housing, industry, commerce, and recreation, Hadid combined these functions into a vibrant "parkscape" that will extend the city organically. She carved new parks and public spaces from an undulating, pulsing grid of new fabric. "It's not a formalist exercise; it's a way of reorganizing space," Hadid suggests.

This is exactly the kind of large-scale project she



Hadid's plan for a commercial center and cinema in Barcelona's Plaza de las Glorias (left) will span existing railway lines.

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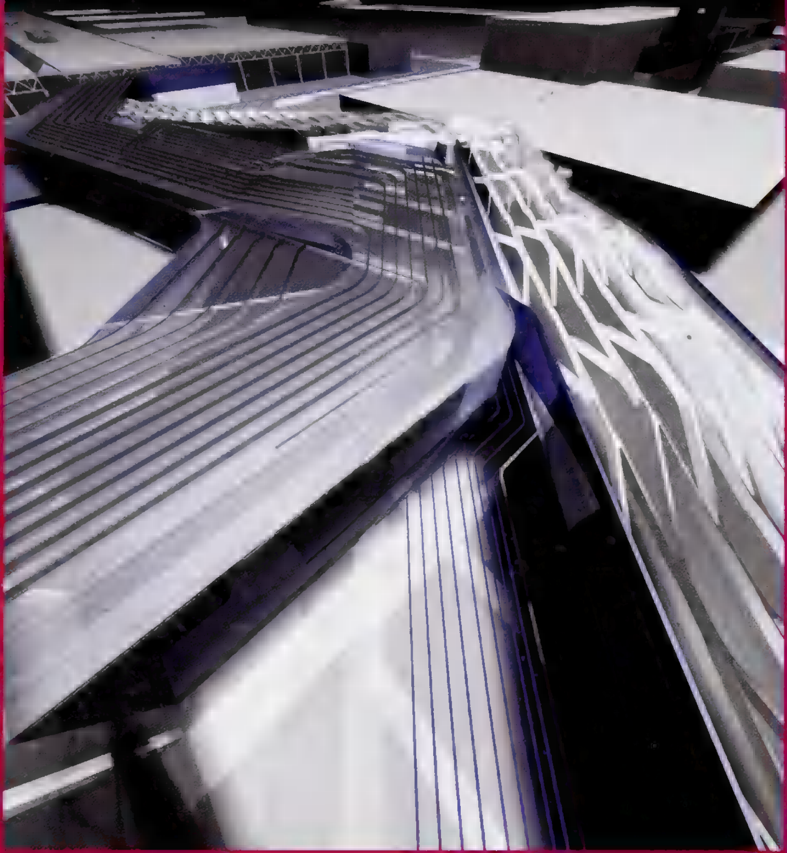


Hadid recently won a competition for a new factory and office complex for BMW in Leipzig, Germany (top).

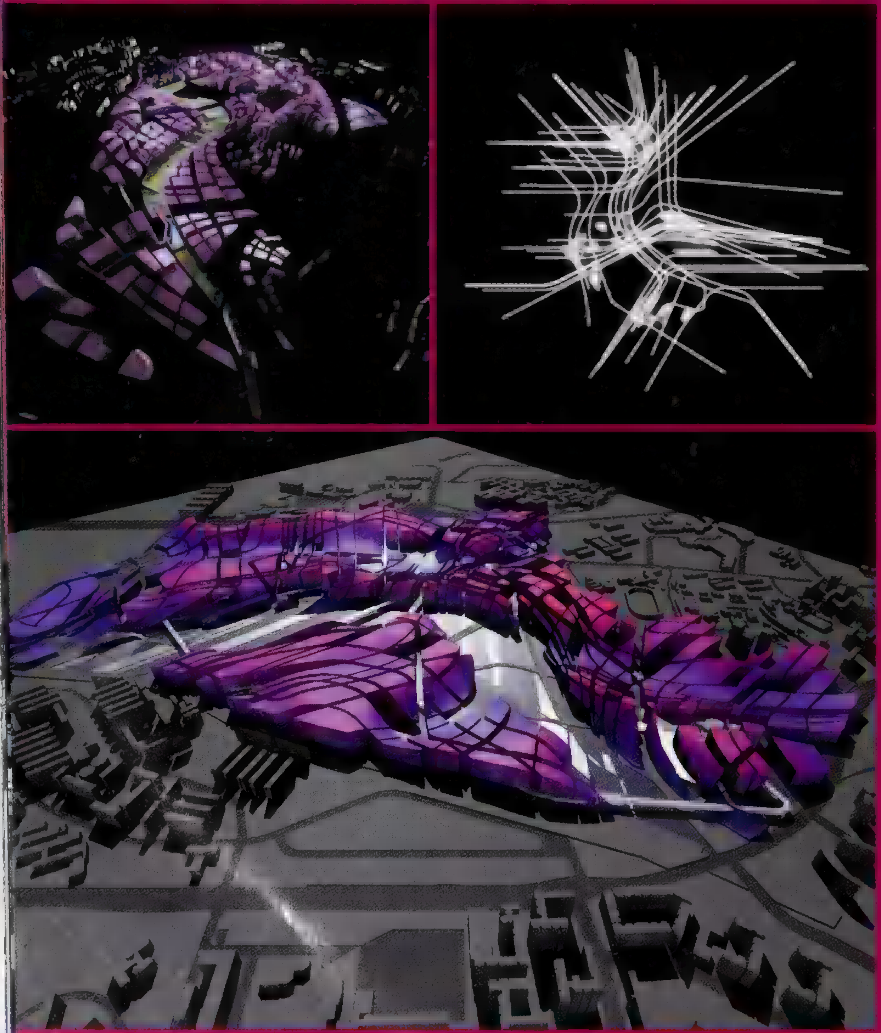
wants to do more of. "People still think there's a dispar between a large urban project, a master plan, and archite ture. I think there's continuity between all these things. N goal is to achieve the ideas of complexity and fluidity on large urban scale," she says. "We've been trying to do that in series of competitions, but we haven't won them yet. Th Rome project comes quite close to that overall view, b architecturally it's still a museum made of pieces."

Hadid is on a roll, but she has yet to build anything i her adopted hometown. "It's a bit ridiculous that all of thes things are happening outside of London. It's frustrating tha I'm sitting in London with no work here, even though th development of the work is an outcome of living here, watch ing a city that is so complex," Hadid laments. "There are s many bits and pieces and strange adjacencies of large structure next to low-income housing and such. I think it's a shame—it' a city I know very well after living here almost 30 years."

Somewhat shockingly, Hadid received the honor o Commander of the British Empire from Queen Elizabeth I in December—a very prominent accolade, given that the establishment has yet to award her a single major commission in the U.K. Some in the British press wondered aloud if the honor was about assuaging guilt over the fiasco in Cardiff. "I'm surprised I even got it," Hadid admits, "because I haven't built anything here, even though there have been ample opportunities to give me work. It's a very strange recognition. The problem is that I'm not seen as a commercial architect, even though I'm sure I'd do a very good office building. And there are no housing projects and no program for cultural buildings, so I'm stuck."

HADID IS ON A ROLL, BUT SHE HAS YET TO BUILD ANYTHING IN LONDON, HER ADOPTED HOMETOWN.

She's also "stuck" because she remains something of an outsider despite a high public profile at home in Britain, boosted by coverage of the Cardiff debacle. She is a stalwart, independent, Iraqi-born woman who refuses to bend her strong will to appease proper society. Meanwhile, male peers like Norman Foster and Richard Rogers have been honored with knighthood and lordship, not to mention choice commissions at home and abroad. If Hadid does reach Foster's and Rogers's level of multinational success—perhaps as Dame Zaha Hadid—rest assured it will be on her terms. After 25 years of practice, she is still breaking all the rules. ■



Hadid's dense, fluid master plan for Singapore's Science Hub (bottom three) will house 50,000 residents and 70,000 workers.

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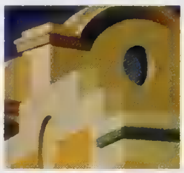

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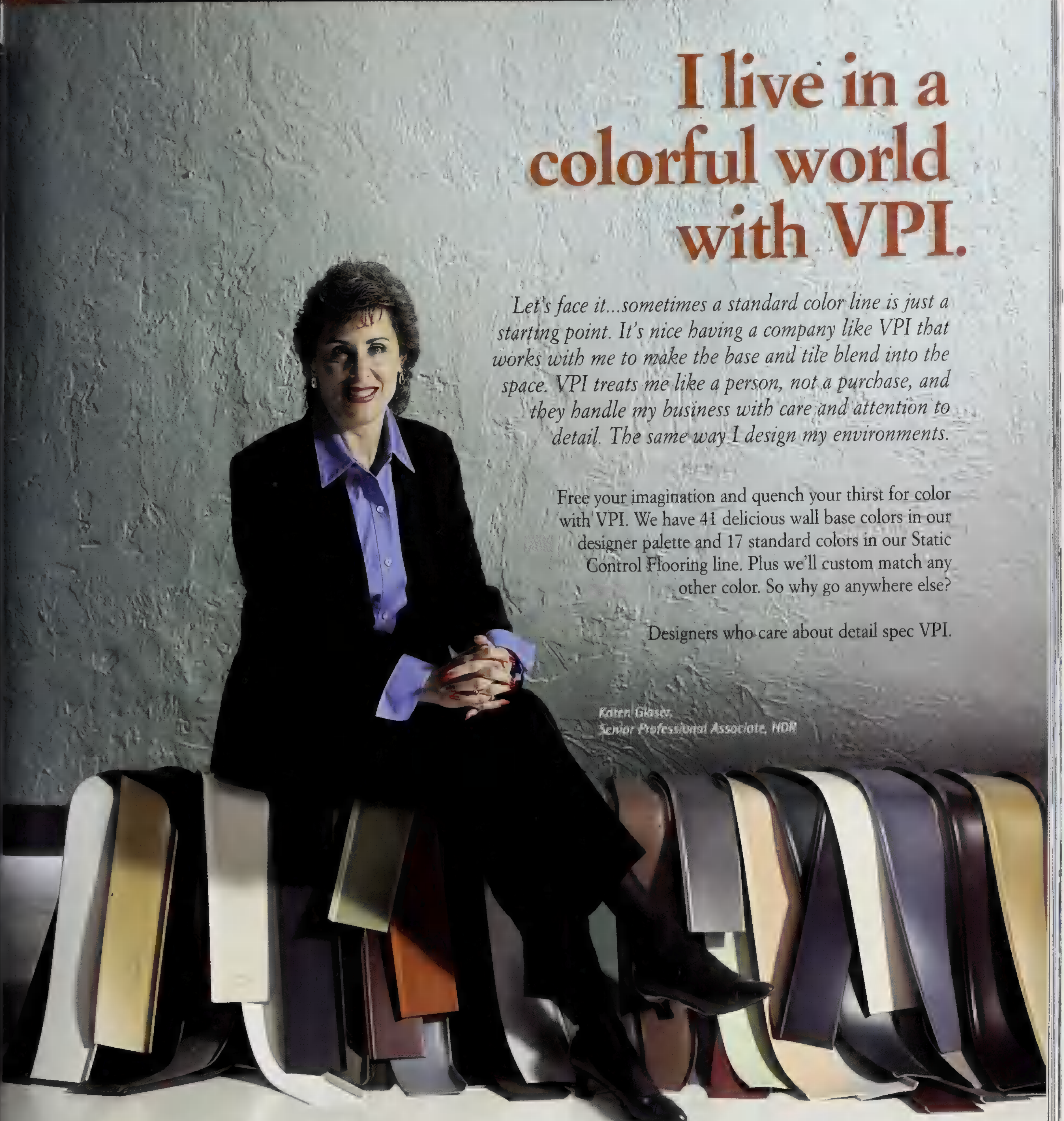
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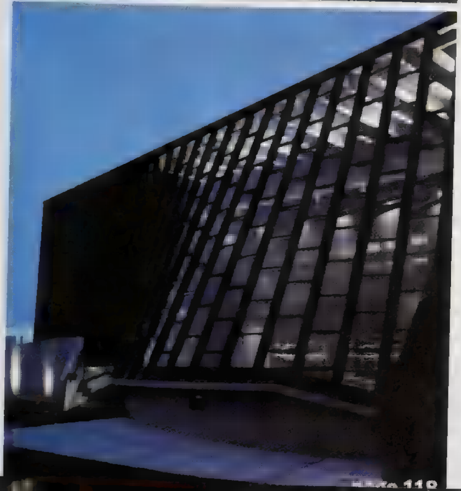


GOING PUBLIC

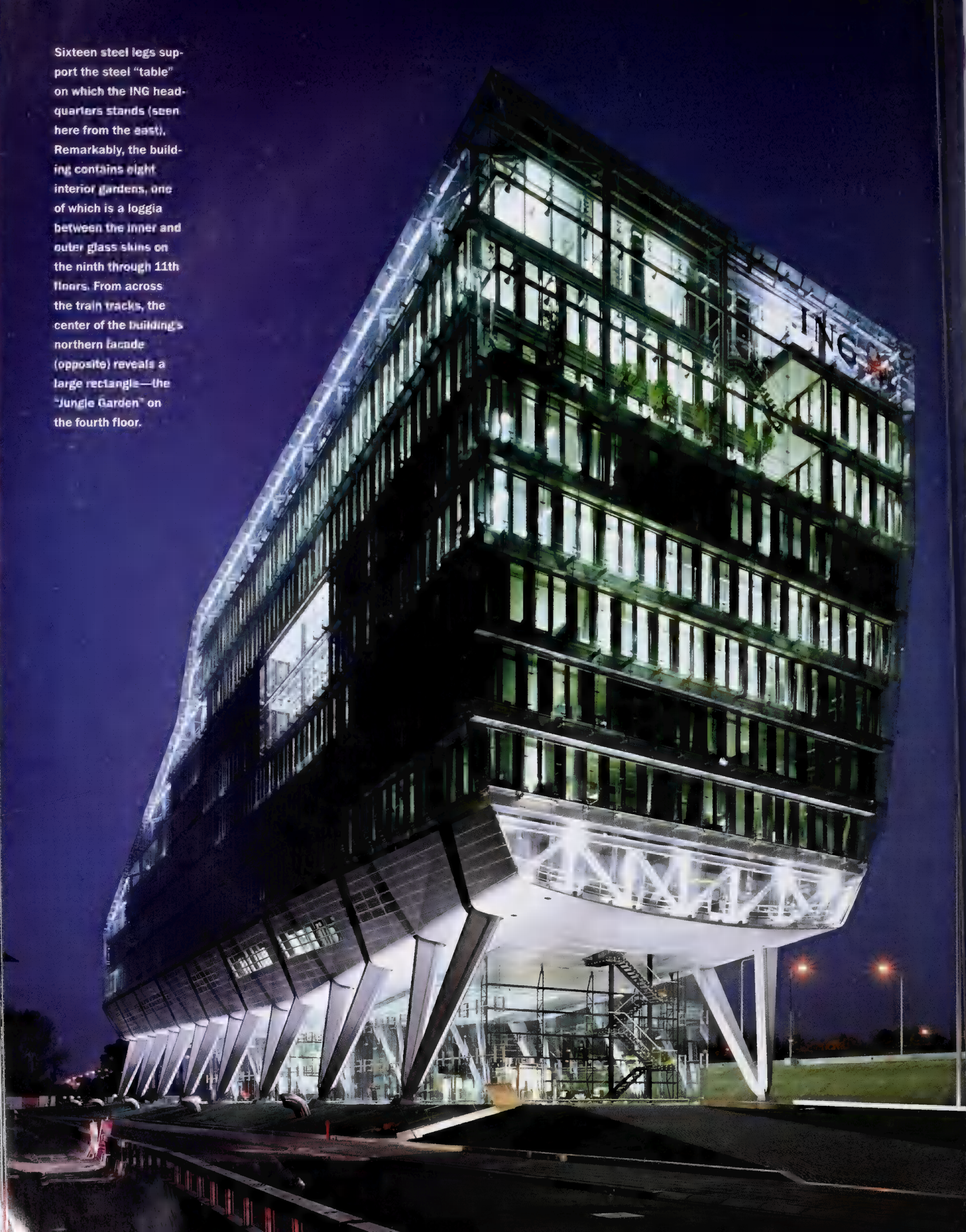
WHETHER CIVIC OR PRIVATE, FOUR PROJECTS DECLARE THAT THE PUBLIC REIGNS

Even private buildings have public responsibilities. As designers, we give lip service to people we euphemistically call the "end users," a broadly defined group. For community buildings with obvious civic goals, the end users constitute the citizenry that such buildings serve. For corporate buildings, however, the question becomes more problematic: What civic obligations do such buildings owe to the city, to its inhabitants, to visitors, or to passersby?

This month, ARCHITECTURAL RECORD presents four diverse projects that attempt, in part, to answer those questions. At the headquarters of the ING Group in Amsterdam, architects and clients agreed on visible monumentality and symbolic transparency as ways of engaging private interests in the public realm; in Japan, the architect Hitoshi Abe employed similar means for a much smaller community center. While the general public finds obvious attraction in Vancouver's new elevated rail system, the inhabitants of the Max Plank Institute in Dresden form its true public, encouraged to enter its transparent walls and aided by its ample public spaces in the communication essential to their work.

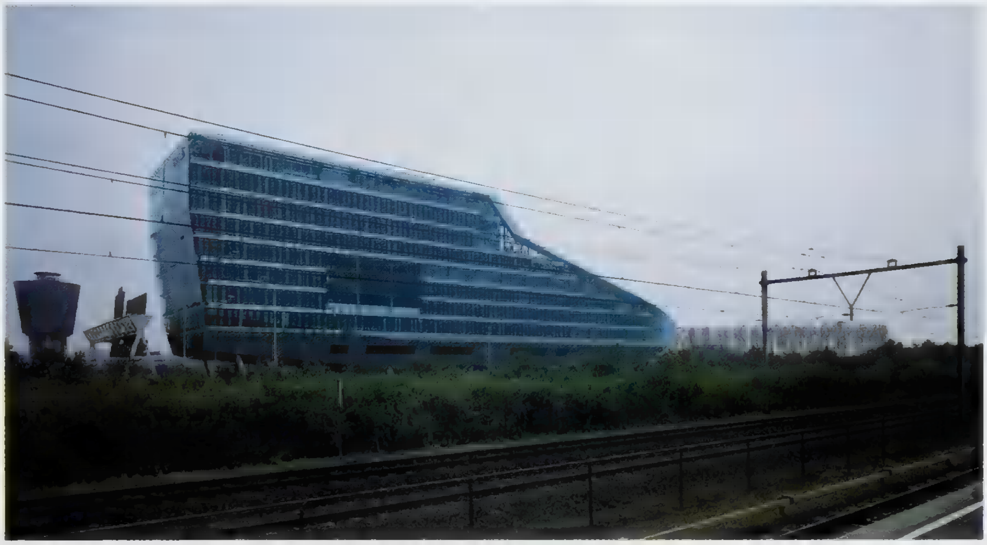
All four invite attention and entry; all four speak in the language of openness and light. Whether public or private, all four create welcoming public realms—because in 2003, the public reigns. *Robert Ivy, FAIA*

Sixteen steel legs support the steel "table" on which the ING headquarters stands (seen here from the east). Remarkably, the building contains eight interior gardens, one of which is a loggia between the inner and outer glass skins on the ninth through 11th floors. From across the train tracks, the center of the building's northern facade (opposite) reveals a large rectangle—the "Jungle Garden" on the fourth floor.



Meyer en **Van Schooten's** new headquarters building serves up a striking feast of glass and steel, and gives the **ING GROUP** an unforgettable place in the Dutch landscape

By Tracy Metz

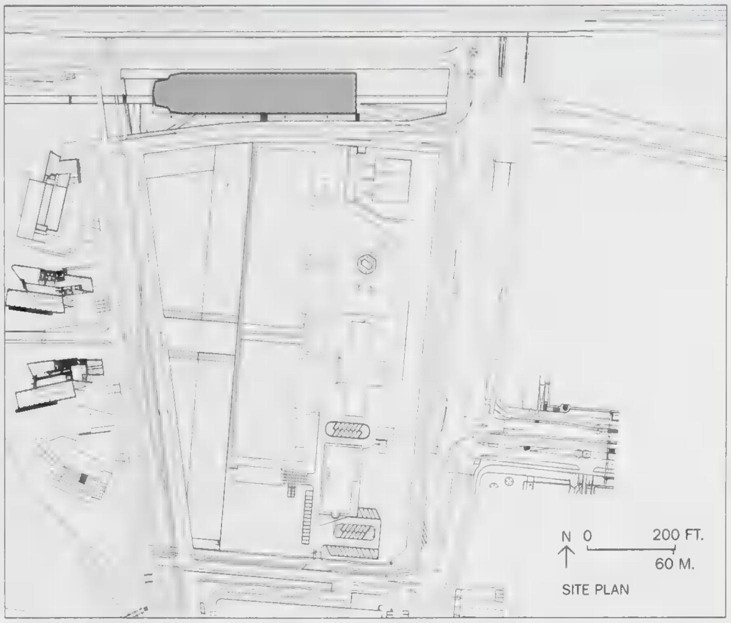


It used to be that banks were heavy, solid places for actually storing money. Now, however, in a time when finance has gone global and virtual and the public role of corporations has changed, other characteristics matter more: Today, trustworthiness is translated as transparency. ING House, front office of the multinational banking and insurance concern ING Group, is therefore made of glass and steel. From the highway, you can look right through it to the meadows beyond. "The form was determined by the function," says architect Jeroen van Schooten, "although of course we then shaped it."

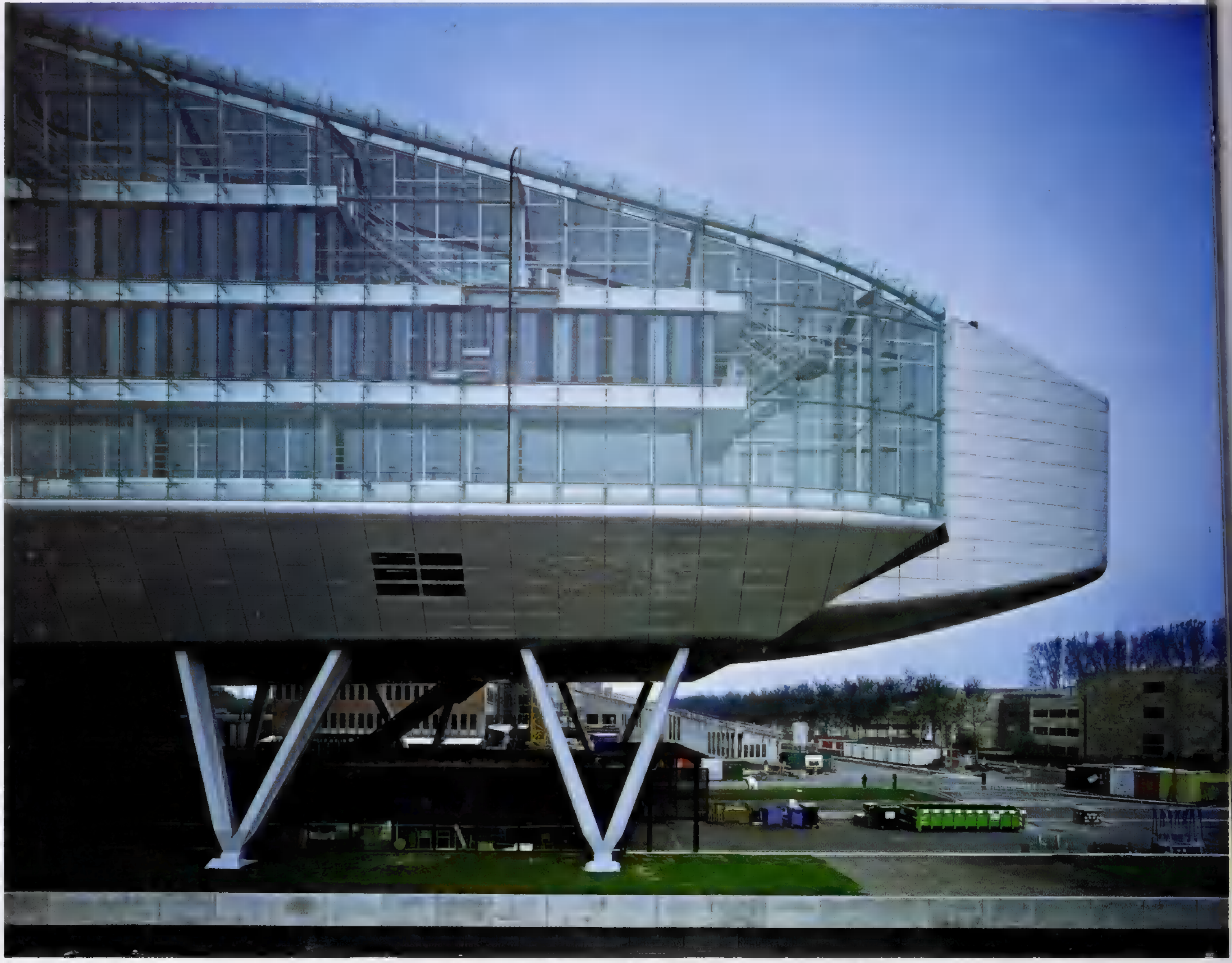
This classical starting point of form following function resulted in a unique building that bears no resemblance to anything that went before. The project's costs are a carefully guarded secret, but the building world knows for a fact that this is by far the most expensive corporate headquarters in the Netherlands.

When ING Group decided in 1997 to build a new headquarters for 450 favored employees, four firms—all of them Dutch, to emphasize the multinational company's national origin—were invited to present their ideas. In giving this complex and prestigious commission to the relatively small and young Amsterdam firm of Roberto Meyer and Jeroen van Schooten, who were then just barely 40 years old, the ING Group confirmed Holland's reputation for trusting its young architects. They had made a name for themselves with the master plan and new head office for the company called Kema in Arnhem; a striking building for an orthodontist's practice in Almere; the makeover of a waterfront warehouse into a furniture showroom; and, of course, their own office—a factory hall in a former railway dockyard that they divided into working spaces with bright blue metal sea containers. Their newest commission, with two other firms, is a Science Center for the University of Amsterdam, to be completed in 2007. They make polished buildings infused by a love of technology and aesthetics in equal parts, using sleek materials like glass and steel in ways that not only look high-tech but are. ING House would not have been possible without computer programs

Tracy Metz is RECORD*'s correspondent in Holland and is the author of the book* Fun! Leisure and Landscape, *released in September 2002 by NAi Publishers.*

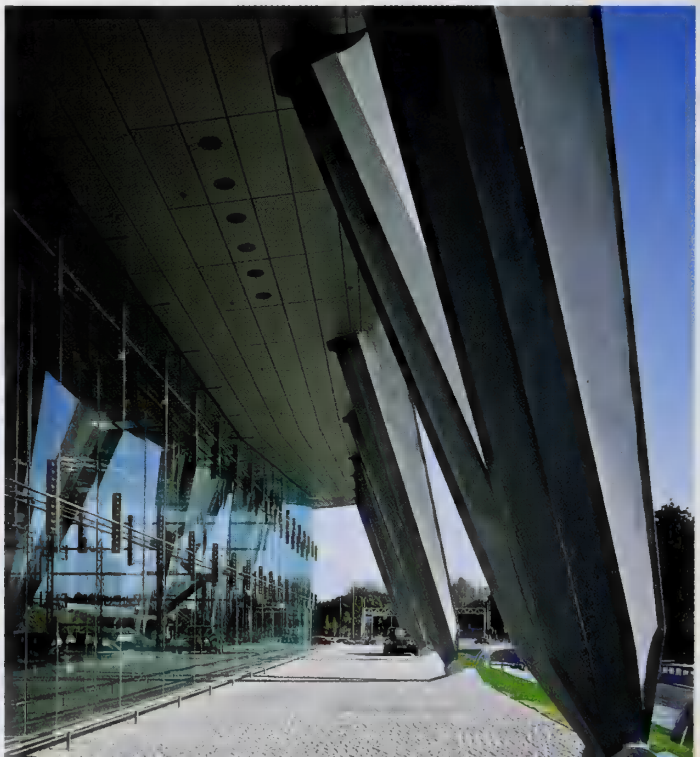


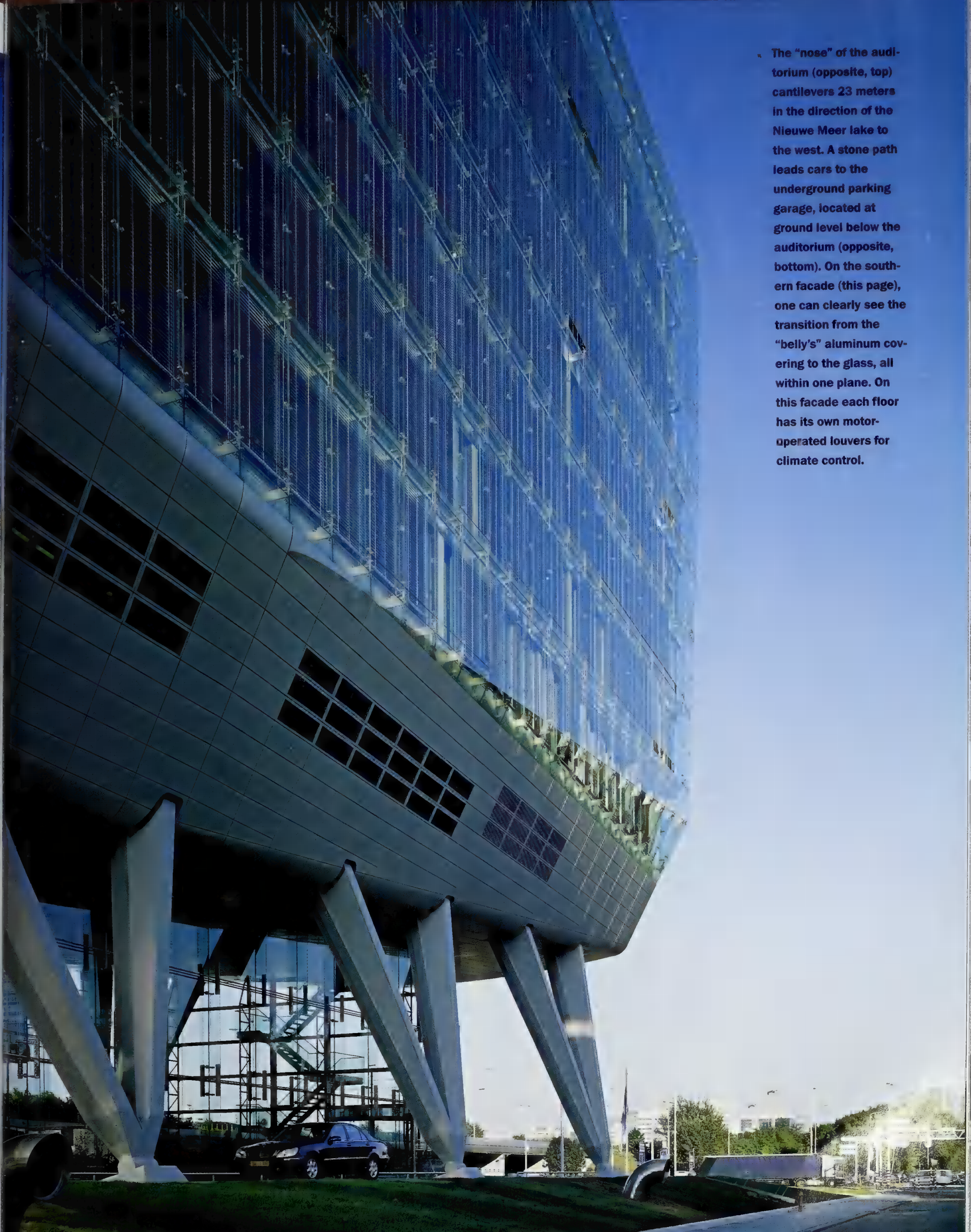
Project: *ING Group Headquarters (ING House), Amsterdam*
Architect: *Meyer en Van Schooten Architecten—Roberto Meyer, Jeroen van Schooten, project architects; Barry van Waveren, project leader; Jean Marc Saurer, Eric Mesman, Arno Compas, Martien Borggreve, Juliëtte Haenen, Felix van Bemmel, Christian Quesada van Beresteyn, project team*
Interior designer: *Designgroep Trude Hooykaas and Meyer en Van Schooten Architecten*
Landscape architect: *Michael R. van Gessel*
Project manager: *IPMMC Vastgoed*



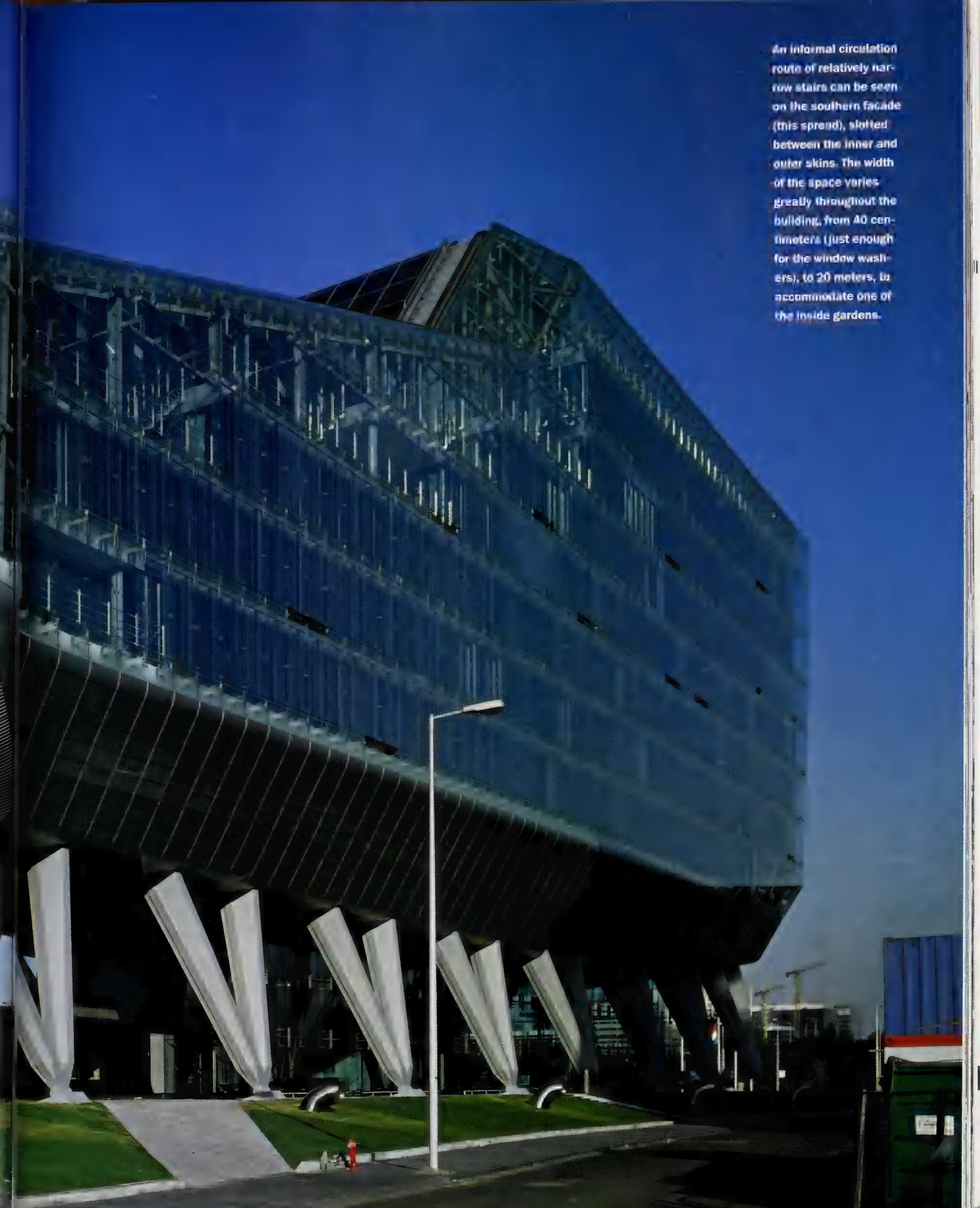
from the auto and aviation industries. That can be clearly seen in the auditorium that cantilevers out more than 20 meters on the west side. The rounded aluminum corners have the look of the aerodynamic Machine Age aesthetic, but in fact they were individually made in specially designed molds, with a craftsmanship otherwise associated with unique, handmade pieces. The seamless transition between glass and steel permits rounding corners and curves with surprising ease. "We use glass and steel differently from the dogmatic Modernists of the 1920s," states Van Schooten. "Then, there always had to be a congruence between shape and material—that was part of the doctrine of 'honesty.' We don't have a dogma, or if we do, it is the congruence of technology and beauty. Here the form takes pride of place. The form was determined by the narrowness of the plot, and by the fact that the building had to be raised up to the level of the highway. Also, the context played a part, starting off low in the west toward the small-scale landscape of the lake, and rising toward the high-rises of the new financial district. One of those high-rises, inter-

ING HOUSE WOULD NOT HAVE BEEN POSSIBLE WITHOUT COMPUTER PROGRAMS FROM THE AVIATION INDUSTRY.

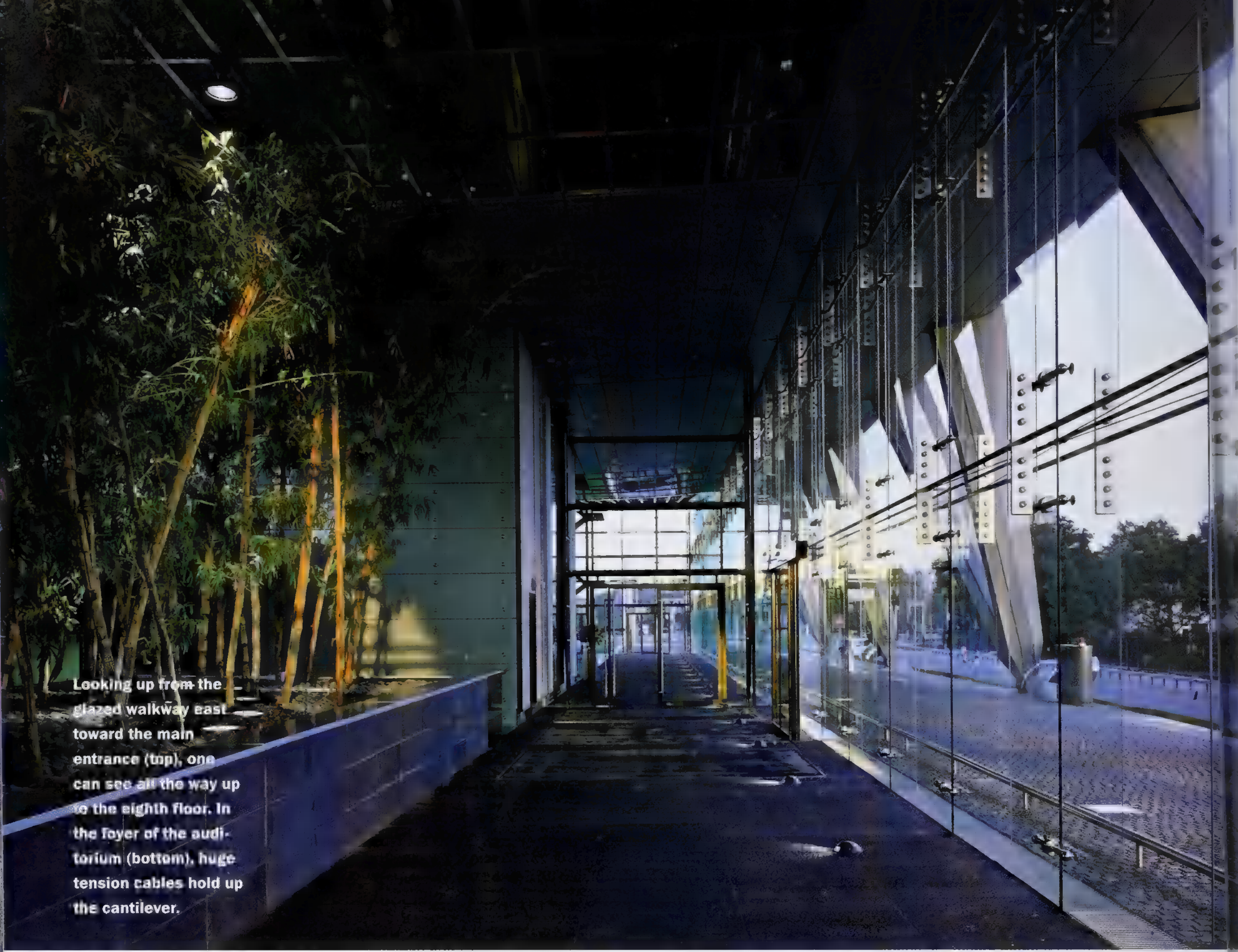




The "nose" of the auditorium (opposite, top) cantilevers 23 meters in the direction of the Nieuwe Meer lake to the west. A stone path leads cars to the underground parking garage, located at ground level below the auditorium (opposite, bottom). On the southern facade (this page), one can clearly see the transition from the "belly's" aluminum covering to the glass, all within one plane. On this facade each floor has its own motor-operated louvers for climate control.



An informal circulation route of relatively narrow stairs can be seen on the southern facade (this spread), slotted between the inner and outer skins. The width of the space varies greatly throughout the building, from 40 centimeters (just enough for the window washers), to 20 meters, to accommodate one of the inside gardens.



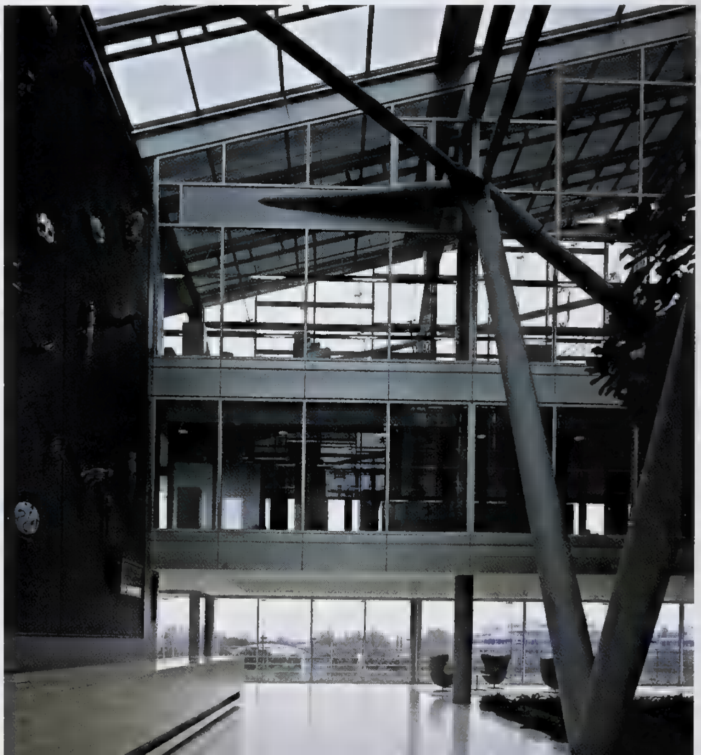
Looking up from the glazed walkway east toward the main entrance (top), one can see all the way up to the eighth floor. In the foyer of the auditorium (bottom), huge tension cables hold up the cantilever.

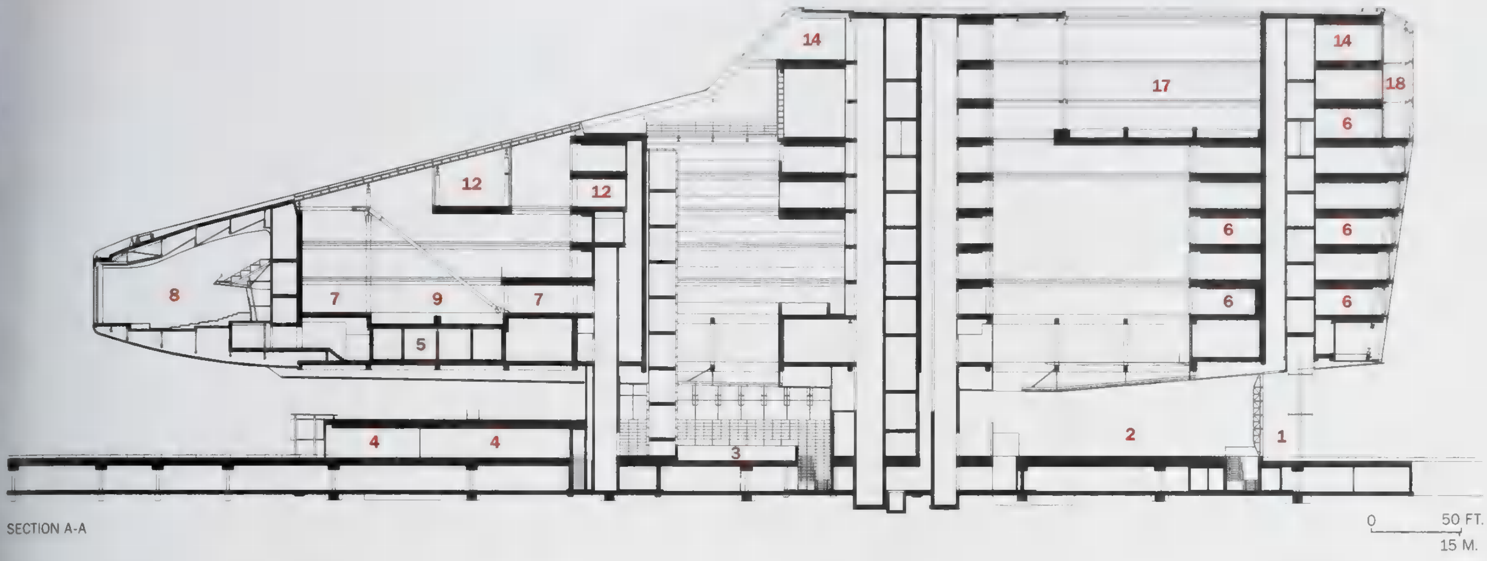
estingly enough, is the ABN Amro Bank, by Pei Cobb Freed.

ING House stands along Amsterdam's ring road, pointing with its "nose" to the water of the Nieuwe Meer lake to the west and nodding at its full 11-floor height to the new business district to the east, the so-called South Axis (Zuidas) between the city and Schiphol airport. The long and narrow plot places the building a mere 25 meters from the highway, forcing the architects to deal with exhaust fumes and noise, while at the same time addressing green issues such as energy conservation and personalized climate control. Indeed, they chose this spot because of optimal visibility, but also because it is between the existing city and the new financial district. ING's brief for both the program and the atmosphere stipulated a building with a structure and facades that would last from 50 to 100 years. "It therefore had to be a durable shell that provides sufficient flexibility inside for future developments in work situations," says Meyer.

ING'S BRIEF STIPULATED A HEADQUARTERS BUILDING THAT WOULD LAST BETWEEN 50 AND 100 YEARS.

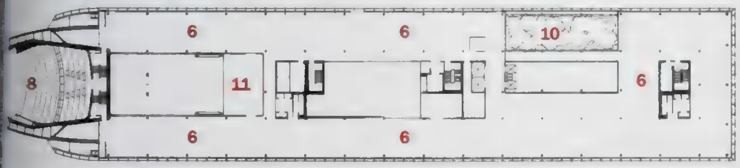
Moreover, an elegant solution had to be found for the 5-to-6-meter difference in height between the ground and the raised highway.



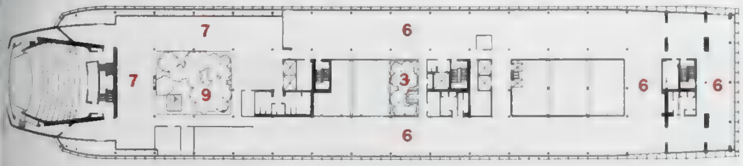


SECTION A-A

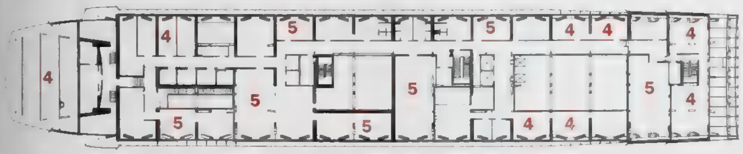
1. *Main entrance*
2. *Reception*
3. *Panoramic elevators*
4. *Service areas*
5. *HVAC*
6. *Offices*
7. *Foyer*
8. *Auditorium*
9. *Fig-tree garden*
10. *Jungle garden*
11. *Terrace*
12. *Restaurant*
13. *Kitchen*
14. *Conference rooms*
15. *Cascade*
16. *Lounge*
17. *Pine forest*
18. *Bougainvillea loggia*
19. *Bar*



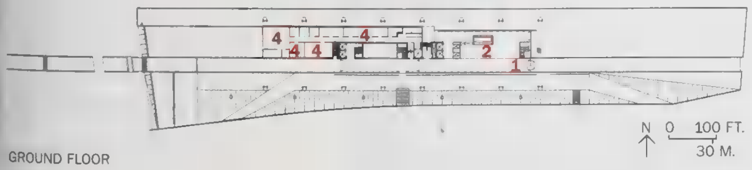
OURTH FLOOR



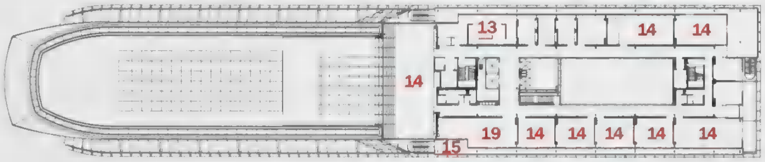
HIRD FLOOR



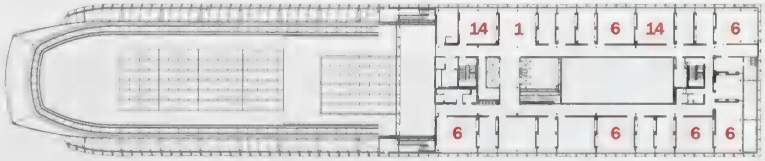
SECTION FLOOR



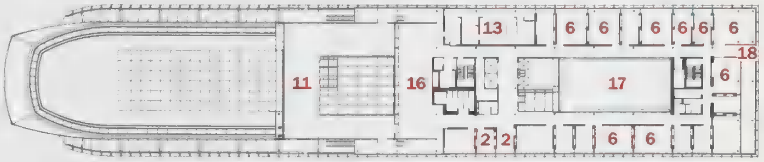
GROUND FLOOR



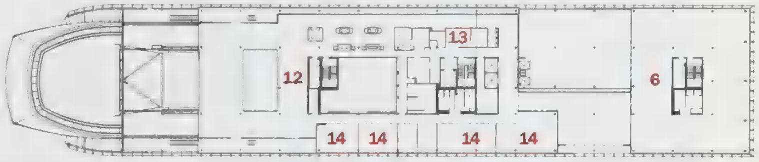
TENTH FLOOR



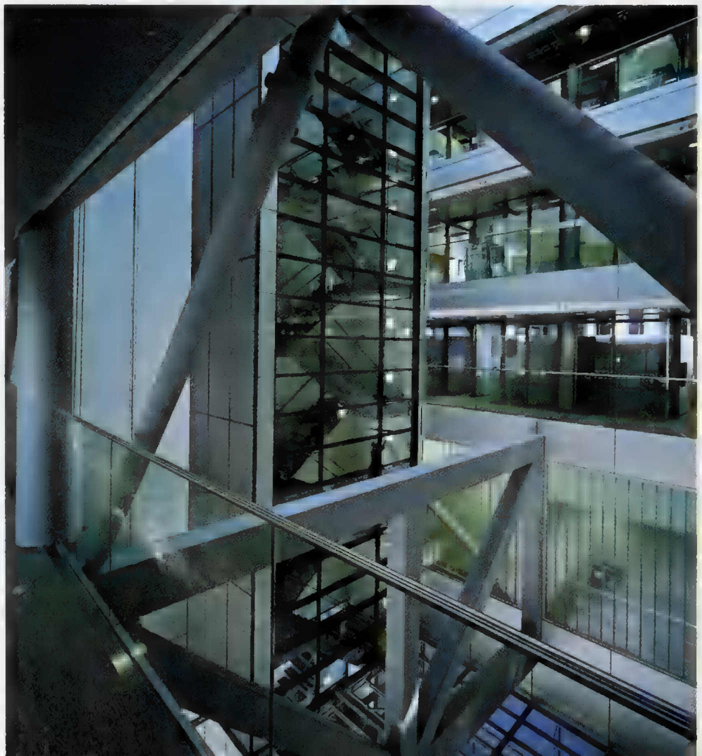
NINTH FLOOR



EIGHTH FLOOR



SIXTH FLOOR



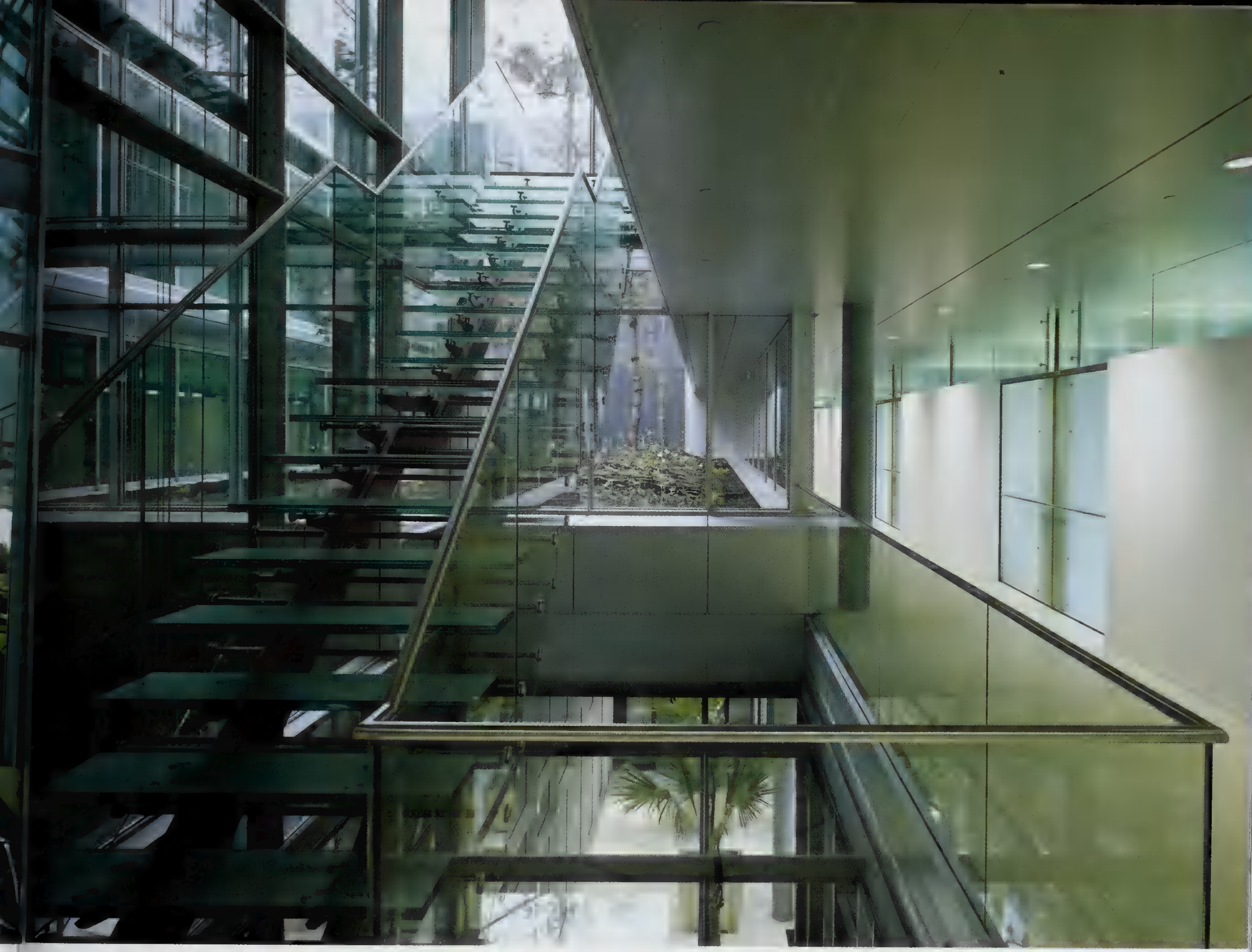
The solution was to construct the building on a steel "table" supported by 16 slender, V-shaped legs. Using a well-known technique in bridge building, these Vs meet in colossal cylinders resting on pins in large steel blocks sunk into the ground.

A low-energy building made of glass? The glazed skins of the facades vary depending on their orientation. To the north, next to the highway, the exterior skin buffers the noise and the fumes. Fresh air is drawn into the space between the two glass skins through the belly. From inside each office, workers can operate their own windows by computer or remote control, automatically closing off the space from the central climate control.

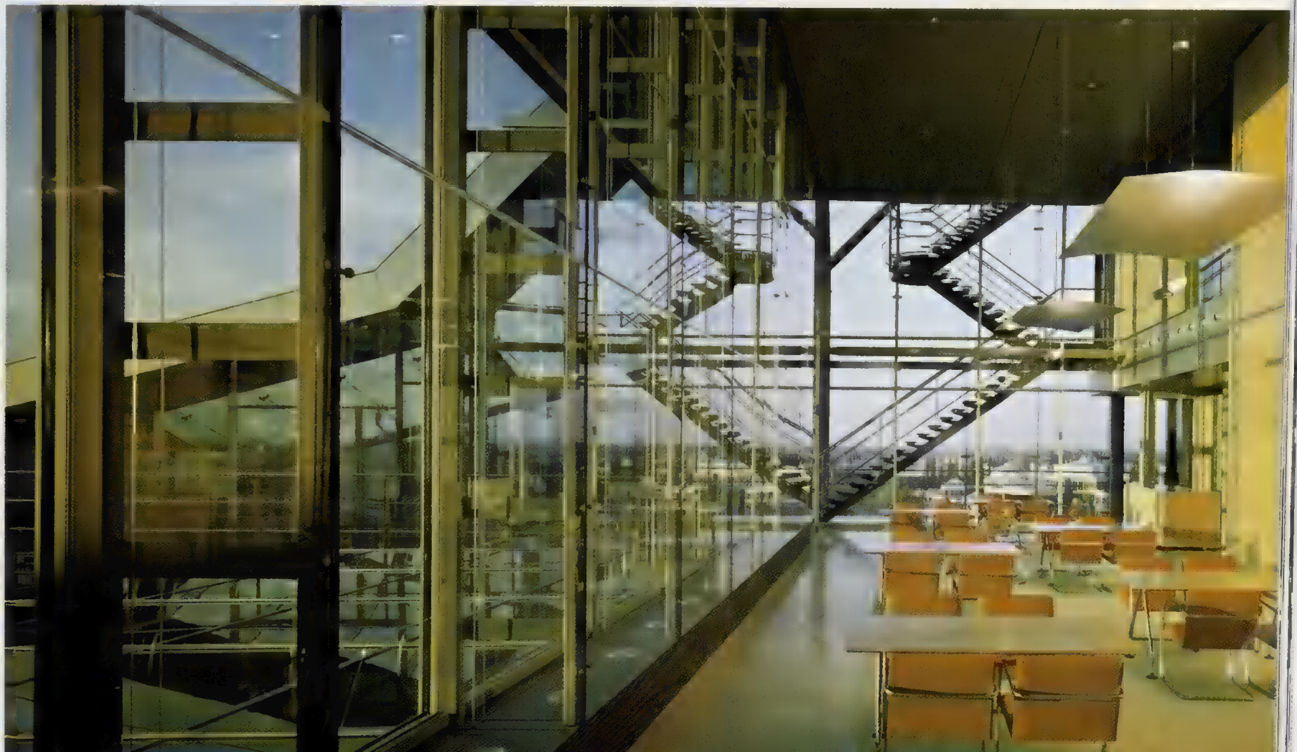
Louvers on the southern facade, each with its own individual motor, open and close centrally and open automatically when the temperature along this facade, the warmest one, rises. That naturally created breeze thus reduces the cooling load.

ING had taken it upon itself to meet strict energy norms, and combined three approaches: The climate facades, the double skin, and a natural aquifer 120 meters under the building. The climate control consists of both chill ceilings and ventilation. The water from the aquifer is pumped from the cold layer to the warm layer, thereby producing energy for the climate installations.

ING House is a mere 28 meters wide, 136 meters long, and at



The sloping roof of the restaurant on the seventh floor (opposite, top) is double glass outside and single glass inside, with sunshades in between. The steel load-bearing construction can be seen from one of the two atria (opposite, bottom). Glass stairs connect the ninth and 10th floors (above), used exclusively by the board of directors. Maplewood walls and Mies van der Rohe chairs are featured in the board's stylish dining room on the ninth floor (right).



the highest point of its 11 floors, 48 meters tall. Of the 20,000-square-meter surface area, less than half is devoted to offices and the rest to the auditorium, restaurants, meeting rooms, generous circulation space, and the eight interior gardens. The plan of each individual floor is therefore different. The board of directors and the executive committee occupy the top three floors, which are connected by glass stairs. The offices are separated by cabinets with double glazing along the top, bringing in light and providing acoustic privacy. In addition to offices, restaurants for both personnel and executives, an auditorium with 250 seats, meeting rooms, a lounge, and underground parking for 160 cars, the building contains eight interior gardens. Meyer en Van Schooten suggested that "green views" from all the workspaces would improve the atmosphere and workers' concentration. The eight gardens, designed by landscape architect Michael van Gessel, not only provide views but are also places where workers can meet and gather. The vegetation varies from bamboo on the ground floor to fig trees on the third, potted palms on the sixth, and sturdy pines as well as potted bougainvillea on the eighth. The gardens serve as orientation points and make it possible at various places to look diagonally all the way through the building. That even applies to the floor of the meeting room of the board of directors, which is partly of glass and allows a vertiginous view into the lounge and the roof terrace below.

The architects decided against the usual standard width of 1 meter 80 in favor of 1 meter 20. ING not only wanted open-plan offices, but also quiet work cells. ING House is a completely autonomous object, evocative of some sleek gadget that you can slip into your pocket and fondle, like the newest model mobile phone or MP3 music player. At the same time, it serves as a *trait d'union* between the small-scale rural landscape of boats, pavilions, and a new jetty at the lake and the high-powered high-rise financial district. What until recently was a nameless bit of no-man's-land next to the highway has been transformed into a landmark. ■

Sources

Aluminum cladding: *Sorba Projects*

Glass curtain wall: *Glaverned*

Windows: *A. Gerritzen Timmerfabriek; Nelissen; Widam nv Aluminiumbouw*

Ceilings: *Inteco; Verwol*

Cabinets and custom woodwork: *Smeulders Interieurwerken*

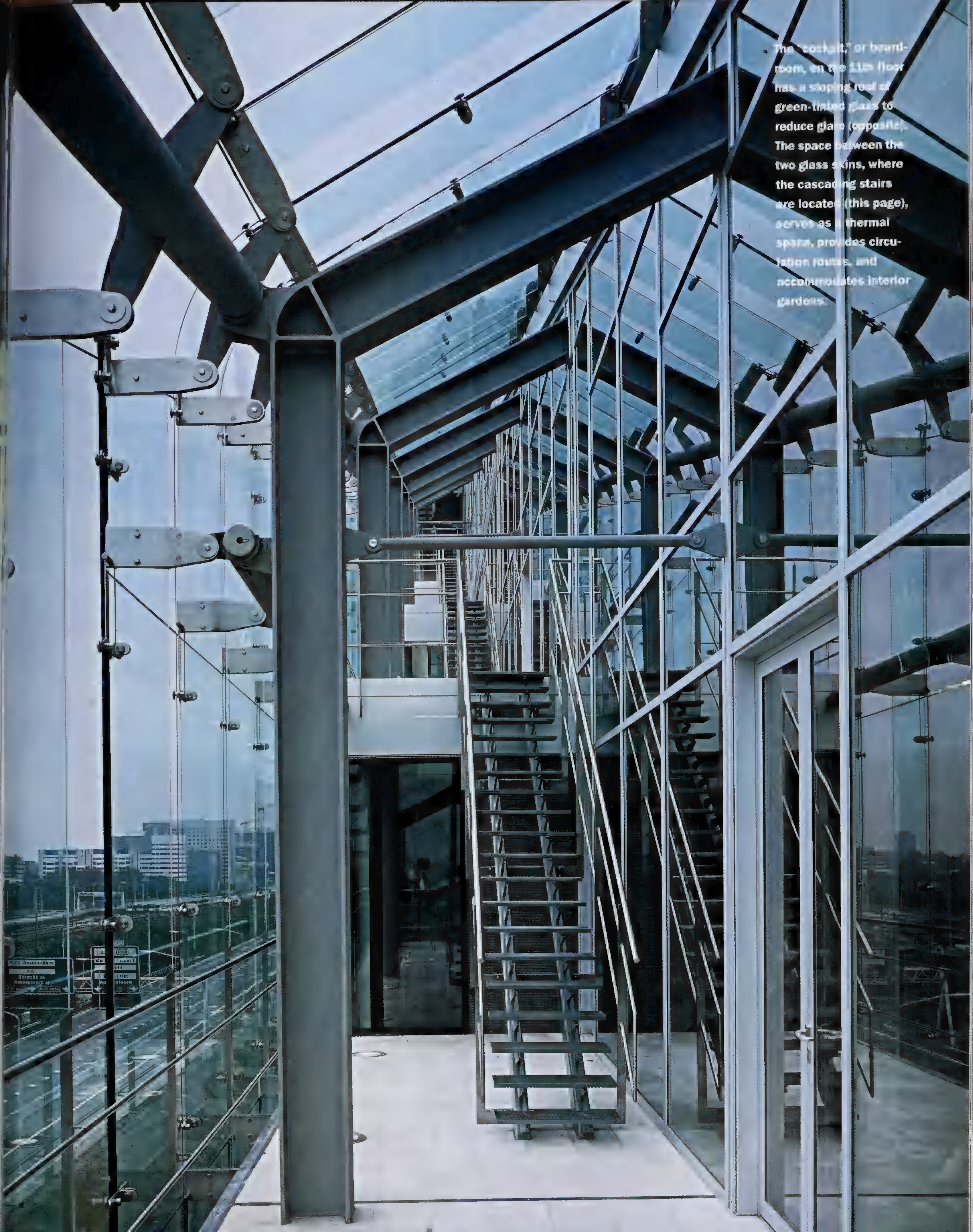
Office furniture: *Ahrend*

Fixed seating: *Poltrona Frau*

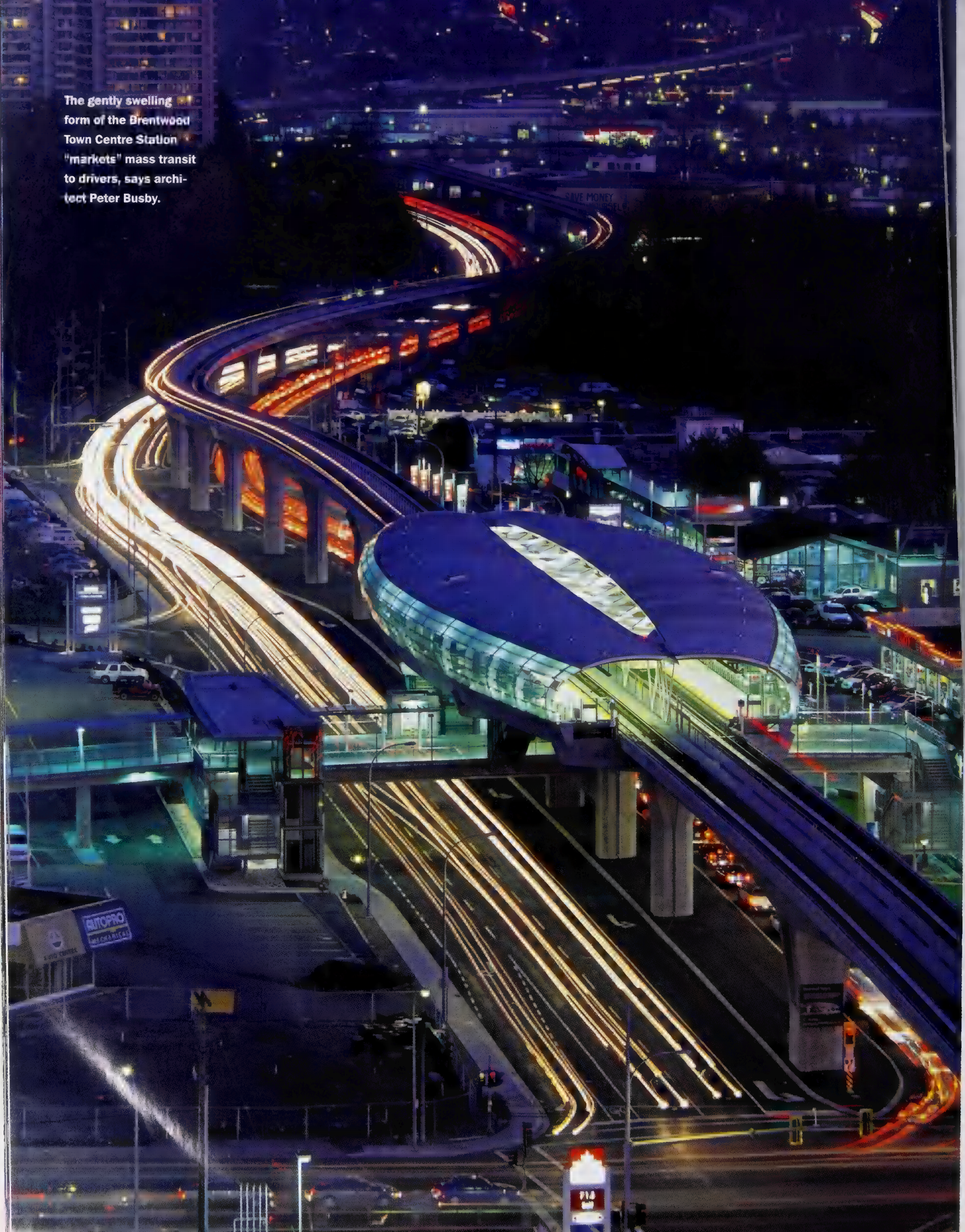
Lighting: *Fagerhult; Reggiani; Erco; Bega; Wila; I Guzzini; Kreon; Philips; Etaloid; Atomis Uplighters; Marlin Lighting*

Plumbing: *Dornbracht; Franke; Kludi; Bobrick*

WWW For more information on the people and products involved in this project, go to Projects at ***architecturalrecord.com***.

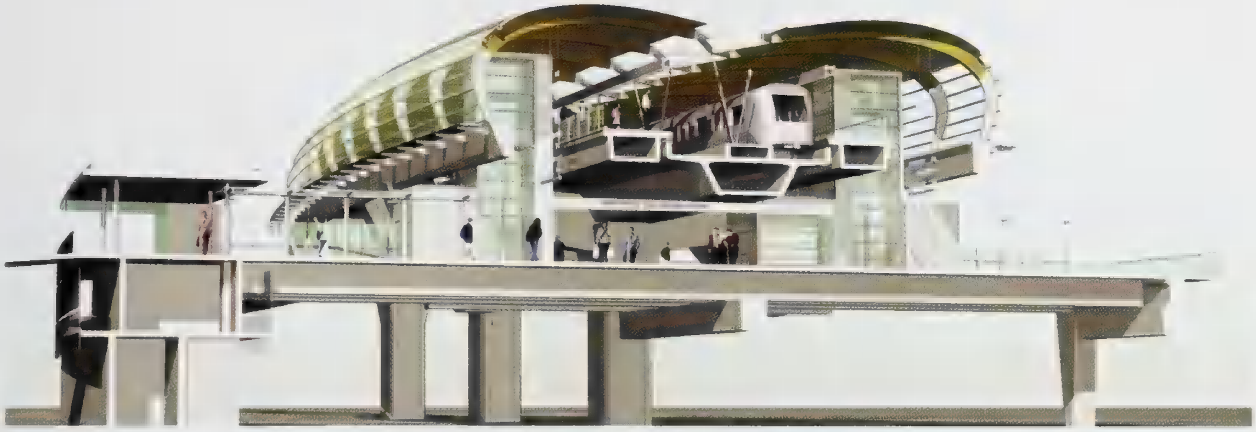


The "cockpit," or boardroom, on the 11th floor has a sloping roof of green-tinted glass to reduce glare (opposite). The space between the two glass skins, where the cascading stairs are located (this page), serves as a thermal space, provides circulation routes, and accommodates interior gardens.



The gently swelling form of the Brentwood Town Centre Station "markets" mass transit to drivers, says architect Peter Busby.

Architect **Busby + Associates** stretched a curving canopy over passengers, giving an iconic image to the new **BRENTWOOD SKYTRAIN STATION**



By James S. Russell, AIA

Few American cities have built elevated transit lines in recent years, daunted by the memorable gloom cast by rusting struts supporting ancient clattering El trains in Chicago, New York, and Philadelphia. Light rail is the transit flavor du jour, running on existing streets or traveling along separate, dedicated rights of way. But the Brentwood Town Centre Station and the 12 other architect-designed stations on Vancouver's new Millennium Line may change attitudes in the States—especially in the far-flung, low-density urban areas where rail offers an alternative to perpetually clogged highways.

What architect Peter Busby describes as the station's iconic presence is not accidental. When it came time to add a new line to the Skytrain (built for the world's fair in 1986), riders rejected as unappealing and unsafe the ponderous cast-concrete stations designed by the line's engineers, glazed in panels of metal mesh.

For the new stations, "the focus was on safety through visibility as well as comfort," says Busby. If you see an inverted canoe in the long, ribbed, curving glass-and-wood platform enclosure, you catch Busby's inspiration: a hull-like quality that suggests movement and speed. "It's an exposed location over a busy highway with wind-driven rain," Busby explains. "So we shrouded passengers with a glazed protective shell." Though the Brentwood station's surroundings present the usual inauspicious suburban ingredients—parking lots, a tired mall, and highway-strip effluvia—the station's location, at a busy bus-transfer point, will become the focus of new, high-density, high-value commercial development. Its sleek shape creates the future center's first memorable image.

The curving enclosure is also structurally efficient, with a roof built up from wood two-by-fours edge-nailed together. This nominally 4-inch-deep roof deck acts as a horizontal diaphragm to brace the glue-laminated ribs. The wood ribs fit into white-painted steel sockets at their base. Busby says the steel more efficiently handles the roof-arch stresses and is more vandal-resistant. Lapped-glass panels cover the curving sides (clips supplied by the architect's in-house furniture and hardware subsidiary). Since the platform carapace swells in plan at the center (to make room for stairs and elevators) and the ribs arch in a compound curve, 3D computer modeling was used to determine the rib geometries and to detail the flat glass panels. With staggered joints taking up the curvature, all panels have identical dimensions.

Busby's team kept passenger visibility in mind as it slipped a mezzanine under the platform. Balustrades, stairs, and elevators are all glass clad, offering easy surveillance from outside. Wide openings at the platform level bring in daylight and draw the eyes of waiting passengers onto the

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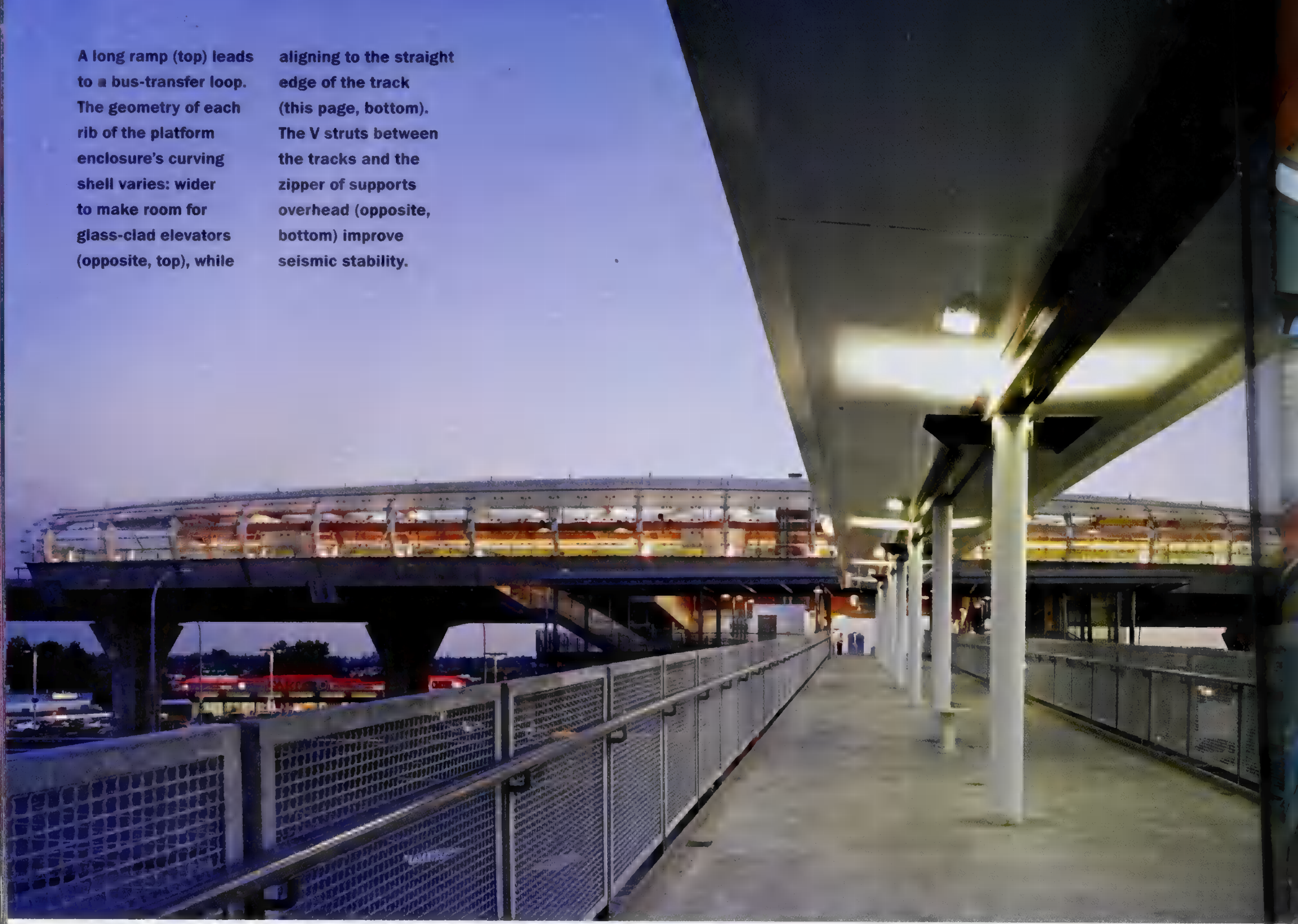
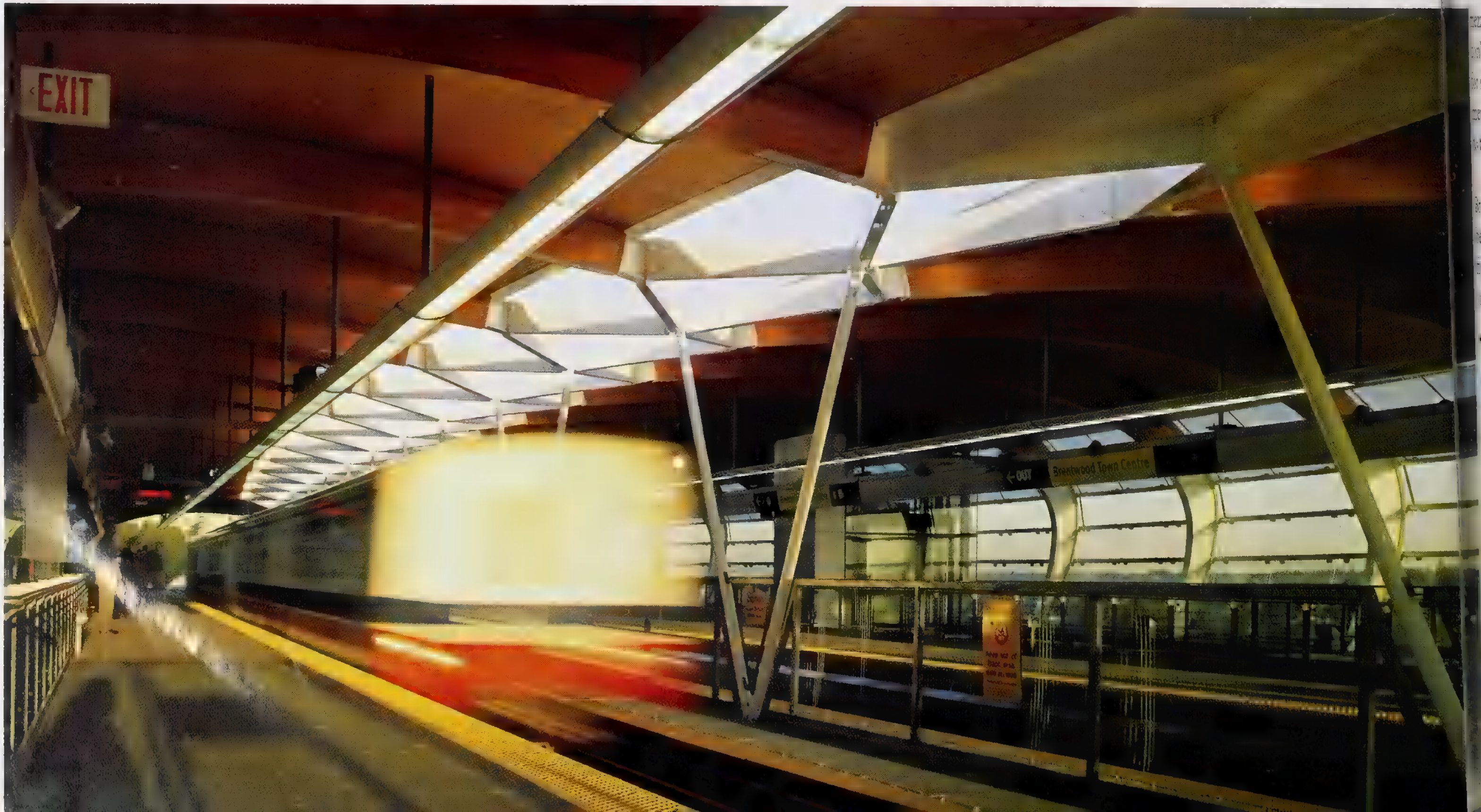
Project: *Brentwood Skytrain Station, Burnaby, British Columbia*
Owner: *Rapid Transit Project Office*
Architect: *Busby + Associates Architects—Peter Busby, principal in charge; Martin Nielsen, associate in charge; Scott Edwards (3D imaging); Adam Slawinski (hand rendering); B. Billingsley, M. Bonaventura, T. Mullock, R. Peck, project team*
Engineers: *Fast & Epp Partners (structural); Agra Simons, Robert Freundlich & Associates (electrical); Klohn Crippen (mechanical)*
General contractor: *Dominion Construction*

PHOTOGRAPHY: © NIC LEHOUX

A long ramp (top) leads to a bus-transfer loop. The geometry of each rib of the platform enclosure's curving shell varies: wider to make room for glass-clad elevators (opposite, top), while aligning to the straight edge of the track (this page, bottom). The V struts between the tracks and the zipper of supports overhead (opposite, bottom) improve seismic stability.

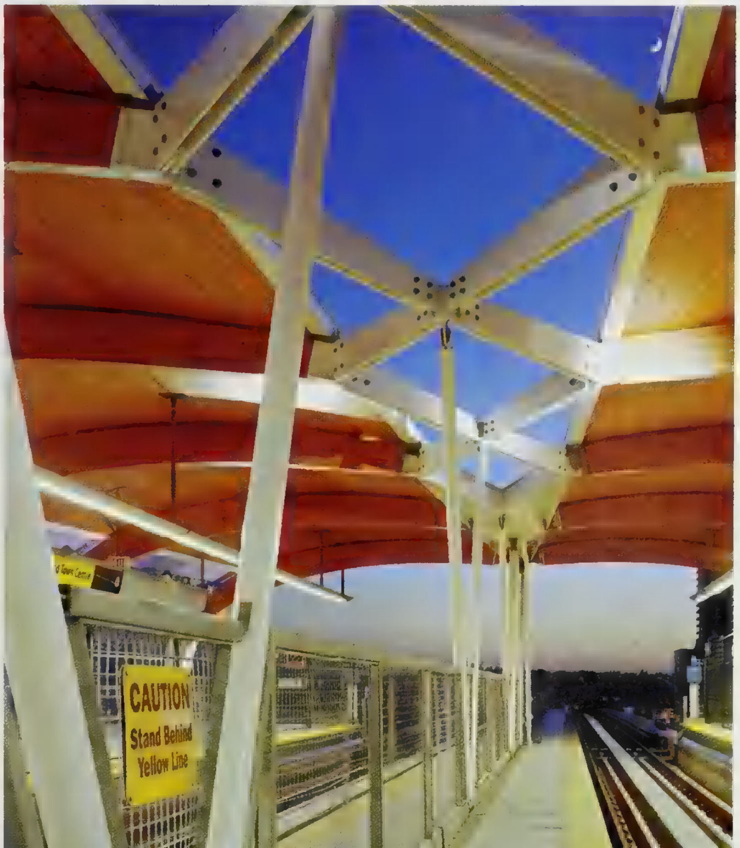


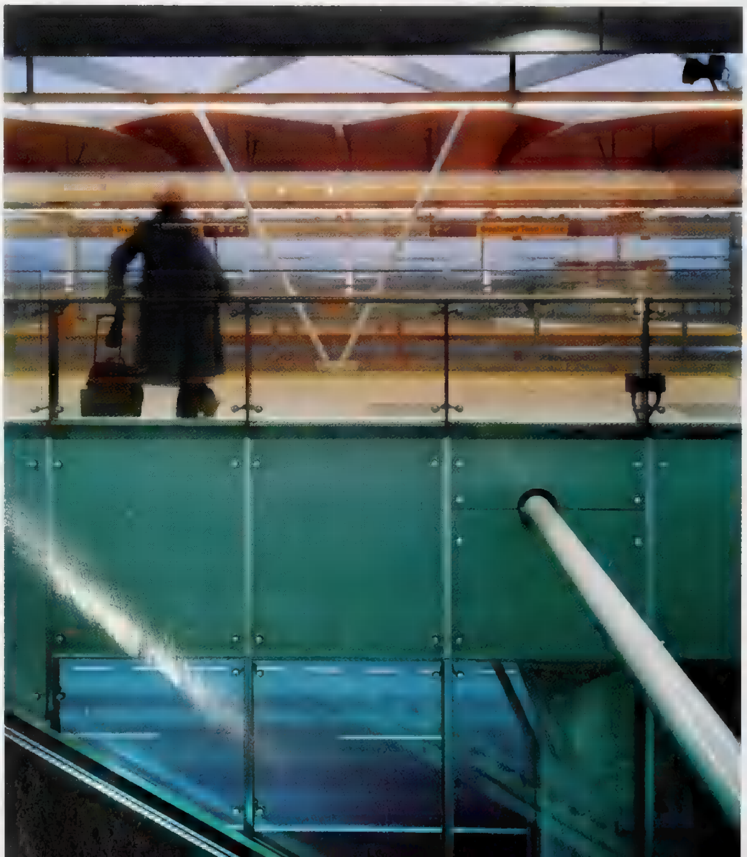


mezzanine below. The mezzanine bridges the busy Lougheed highway (you don't have to pay a fare to cross), a right-of-way the Millennium Line shares for much of its length. In this way, the station ties together future development on both sides of the road. A long ramp extends from the mezzanine to the bus-transfer loop in the mall parking lot.

Architect-designed rail stations remain a rarity in the U.S., but Brentwood's elegant yet sensitive design makes a powerful case for getting beyond the usual engineering kit of parts. (Busby designed two stations; five other firms built exemplary stations along the line as well.) It's not just that the appealing imagery of Brentwood "markets" the notion of mass transportation to drivers stuck in traffic, as Busby observes. Appealing stations get people to accept the idea of elevated lines, which can be built quickly and for far less money than underground or trenched systems, and which can successfully share existing public rights-of-way. The Brentwood station cost about $5.2 million in U.S. dollars; the entire line came in at about $715 million. Unfortunately, the elegant station architecture is undercut by the clumsiness of the guideway, designed and built by a consortium called SAR Transit. People don't want to live and work next to the crudely designed systems in Atlanta and Miami, while

THE STATION CREATES A MEMORABLE IMAGE AS THE FULCRUM OF PLANNED HIGH-DENSITY DEVELOPMENT.





elevated portions of Washington, D.C.'s Metro and San Francisco's BART have won acceptance and spurred development.

Vancouver's system performs impressively. Trains arrive every 3 to 4 minutes, moving passengers at around 50 mph between stations about a mile apart. This ride is much faster than at-grade light rail, and quite competitive with drive times. (It takes 24 minutes to traverse the entire 13-mile line.) The automated system is driverless, which is not possible with light-rail trains that navigate streets or at-grade crossings. The frequency and speed have attracted high ridership, but the system also works because city planners have successfully focused high-density commercial and residential centers around the existing line, which operates near break even.

Vancouver's experience—along with frustration over a light-rail system's spiraling delays and costs—encouraged Seattle voters in November to approve construction of an elevated monorail line. We may soon be seeing more trains above us. ■

Sources

Roofing: *Carlisle*

Aluminum fittings: *Designlines/Componance*

Uplighting: *Elliptipar*

Metal panels: *Mercury Metals*

Metal/glass curtain wall: *Columbia Skylights*

Concrete: *Con-Force Structures*

Wood glulam beams: *Structurlam Products*

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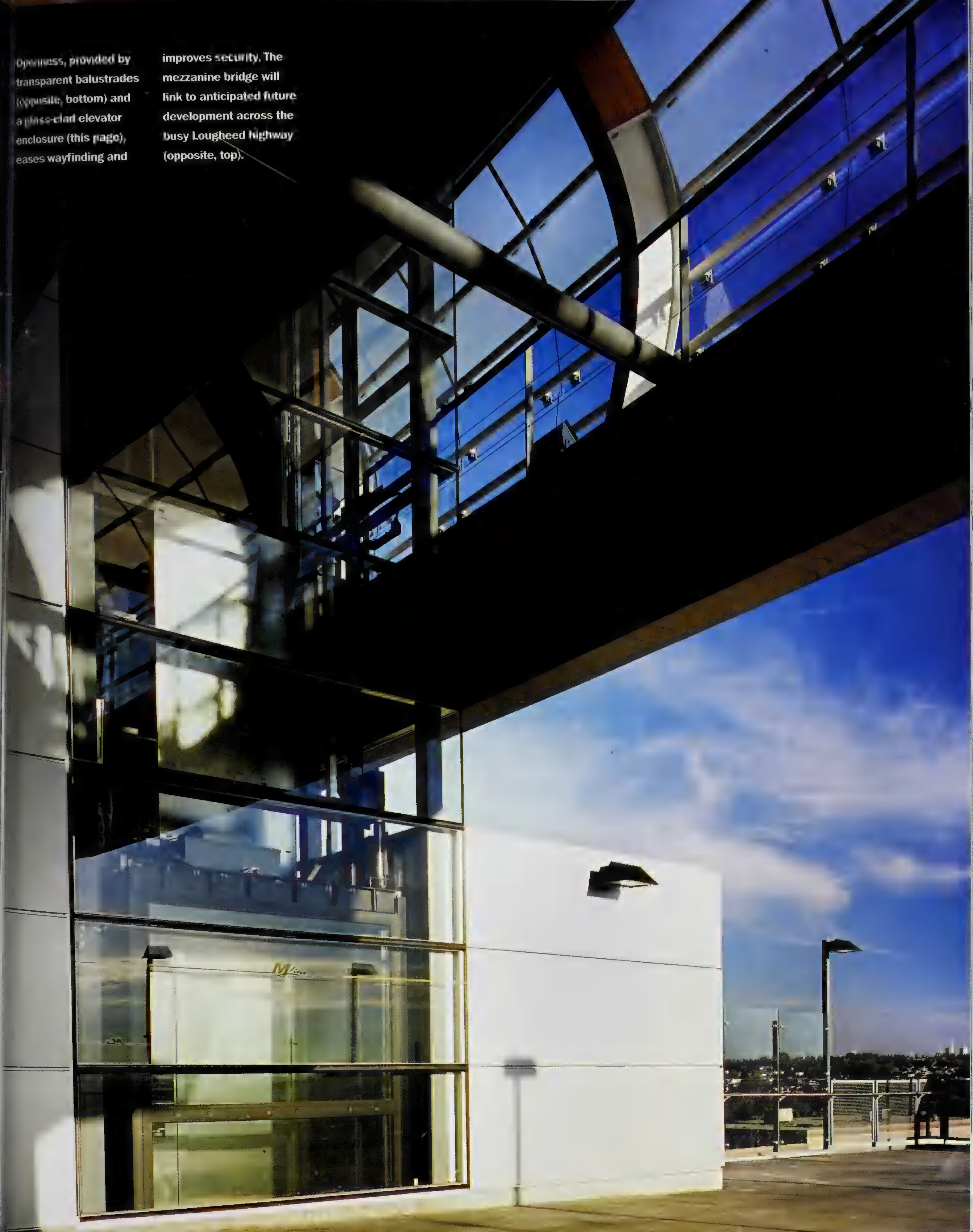
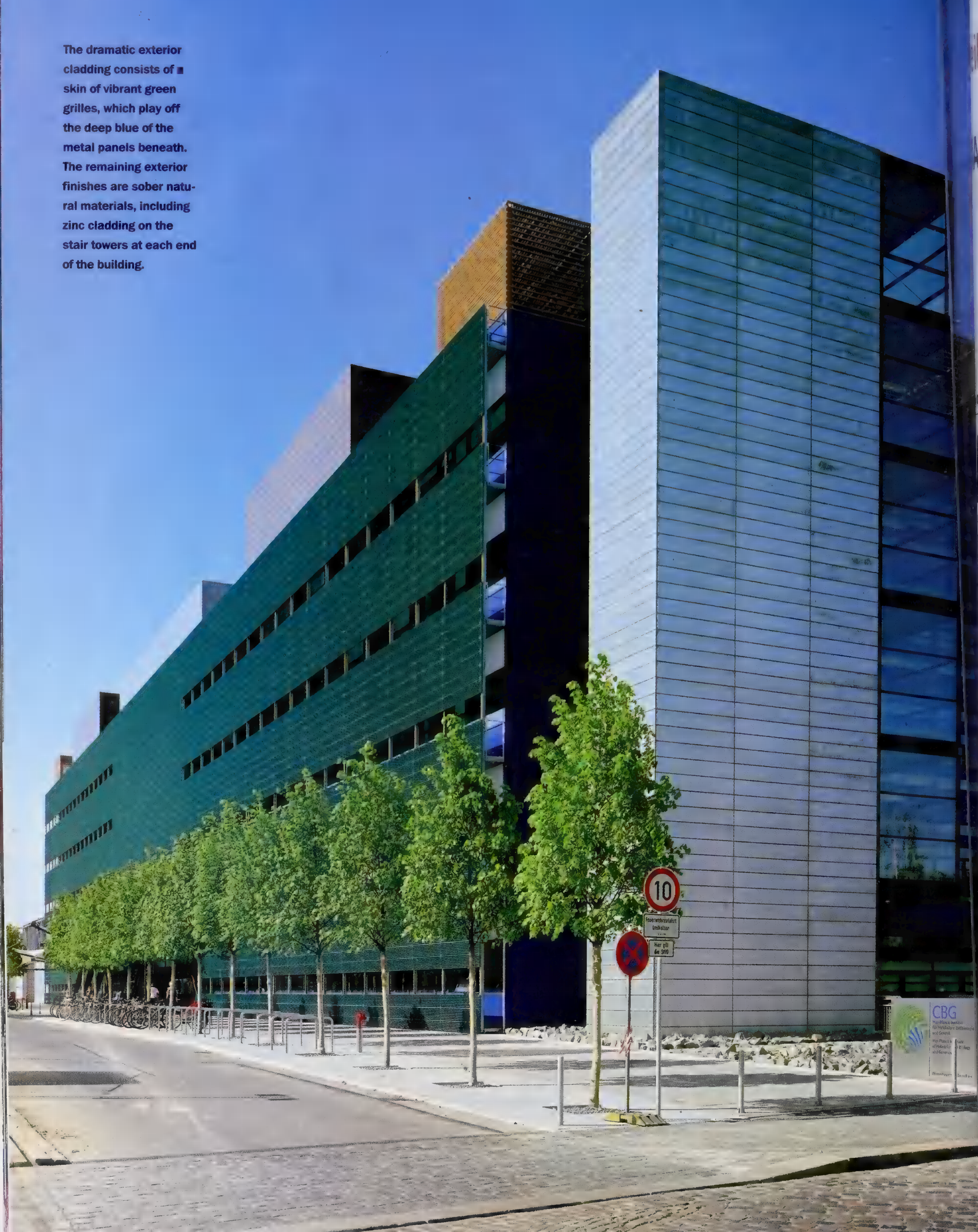
Openness, provided by transparent balustrades (opposite, bottom) and a glass-clad elevator enclosure (this page), eases wayfinding and improves security. The mezzanine bridge will link to anticipated future development across the busy Lougheed highway (opposite, top).





The dramatic exterior cladding consists of a skin of vibrant green grilles, which play off the deep blue of the metal panels beneath. The remaining exterior finishes are sober natural materials, including zinc cladding on the stair towers at each end of the building.

Heikkinen-Komonen Architects create a sense of community for scientists at the MAX PLANCK INSTITUTE in Dresden

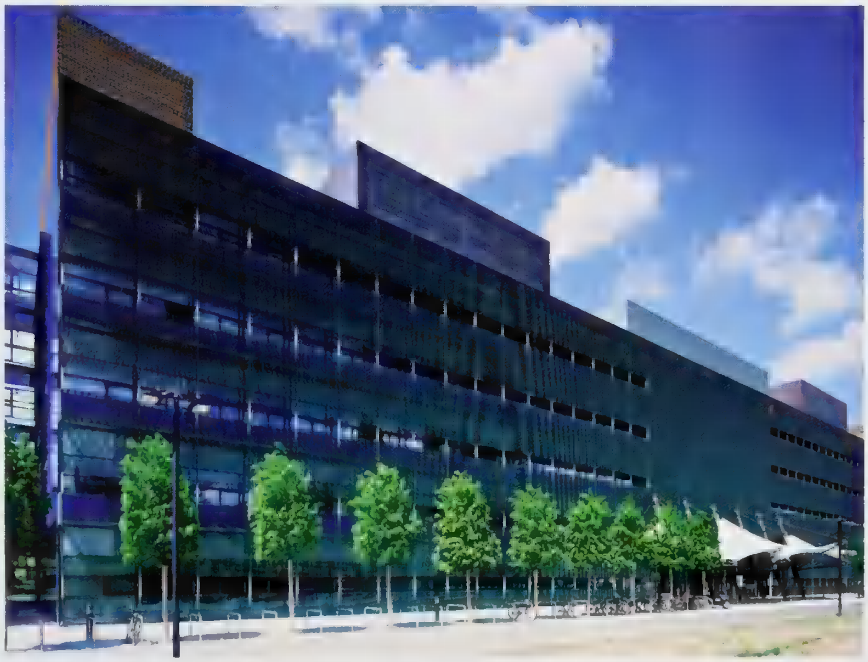
By David Cohn

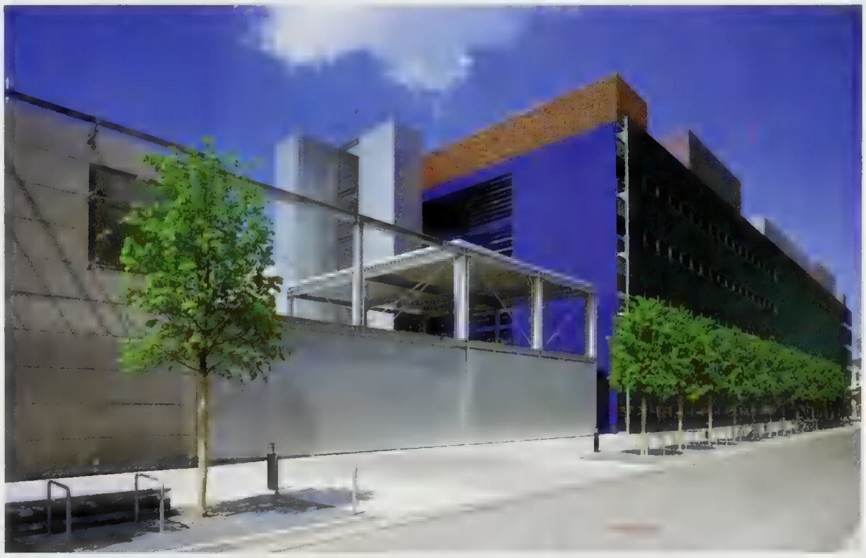
According to Mikko Heikkinen and Markku Komonen, architects of the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden, Germany, "a modern research laboratory is similar to a high-tech appliance." The task of the architect in such a project, they maintain, goes beyond its exacting technical requirements or questions of styling, to assuring that "the working environment helps, rather than hinders, the researchers in their highly demanding creative work." In Dresden, the designers' concern has been to shape the building so as to promote a sense of community and collective identity among the scientists that use it. They have pursued this aim through two basic strategies: a spectacular atrium that creates a central communal focus inside the building, and a vividly colored and veiled exterior facade that gives the structure a seductive aesthetic allure.

The institute was established by the German government as part of its program to rebuild the economy of the former East Germany. Its research program focuses on the mechanisms of cellular growth and attracts the kind of start-up companies and private research grants that can become the seeds of future industries. There are two other Max Planck Institutes in Dresden and 81 throughout Germany.

The institute's executive director, Kai Simons—who, like Heikkinen and Komonen, is from Finland—had a very clear idea of what he expected from the architects. "The key to science is communication," he maintains. He and the institute's four other directors presented the architects with freehand sketches of how they thought the building should be organized. As Heikkinen and Komonen recall, "They were concerned about how to promote synergy, cooperation, and community. The idea was to try to force the scientists to come together, to create the critical mass necessary for new discoveries."

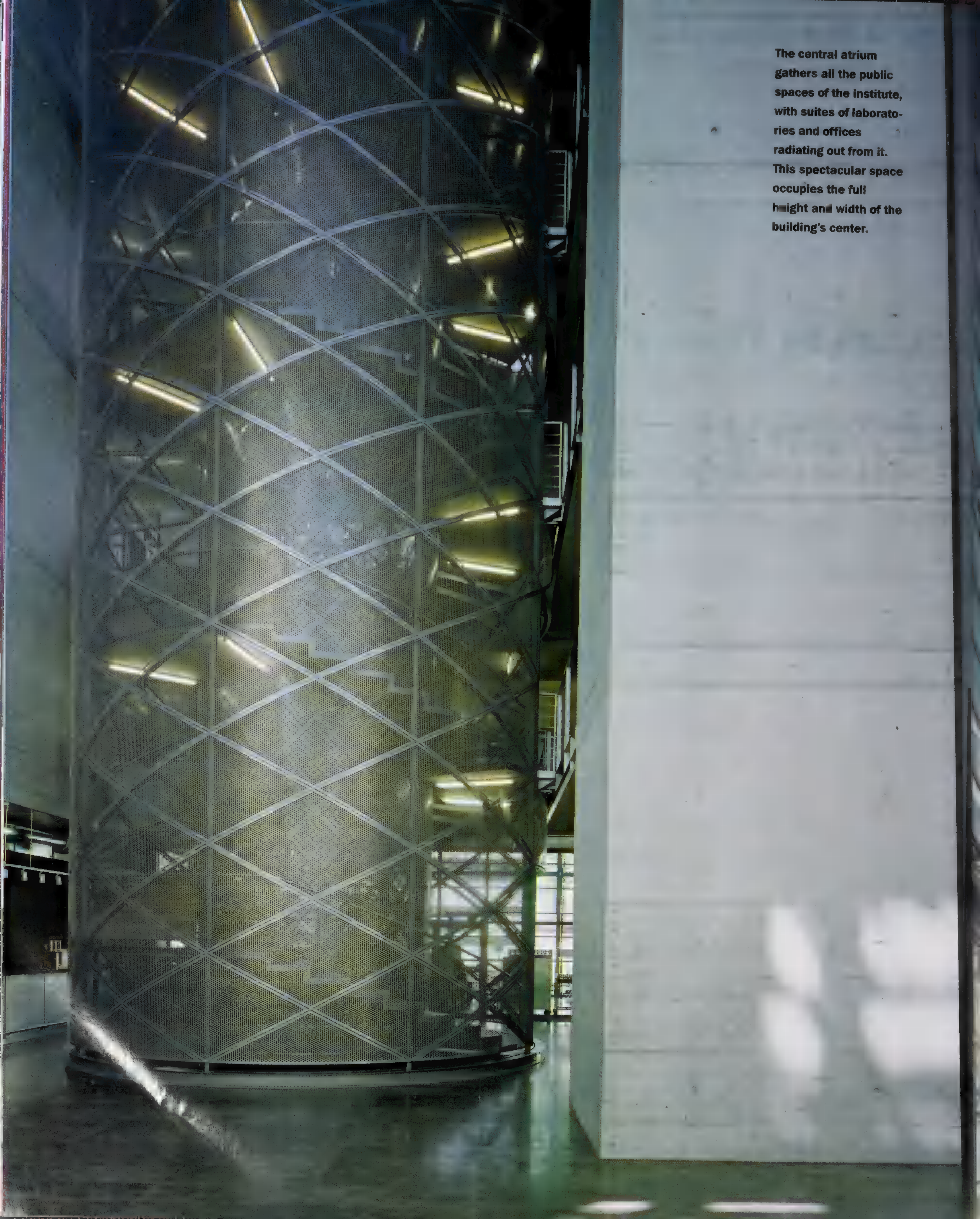
The soaring atrium was the key to this strategy, a space that gathers all the public areas of the facility, with the suites of laboratories and offices radiating from it. The atrium occupies the full height and



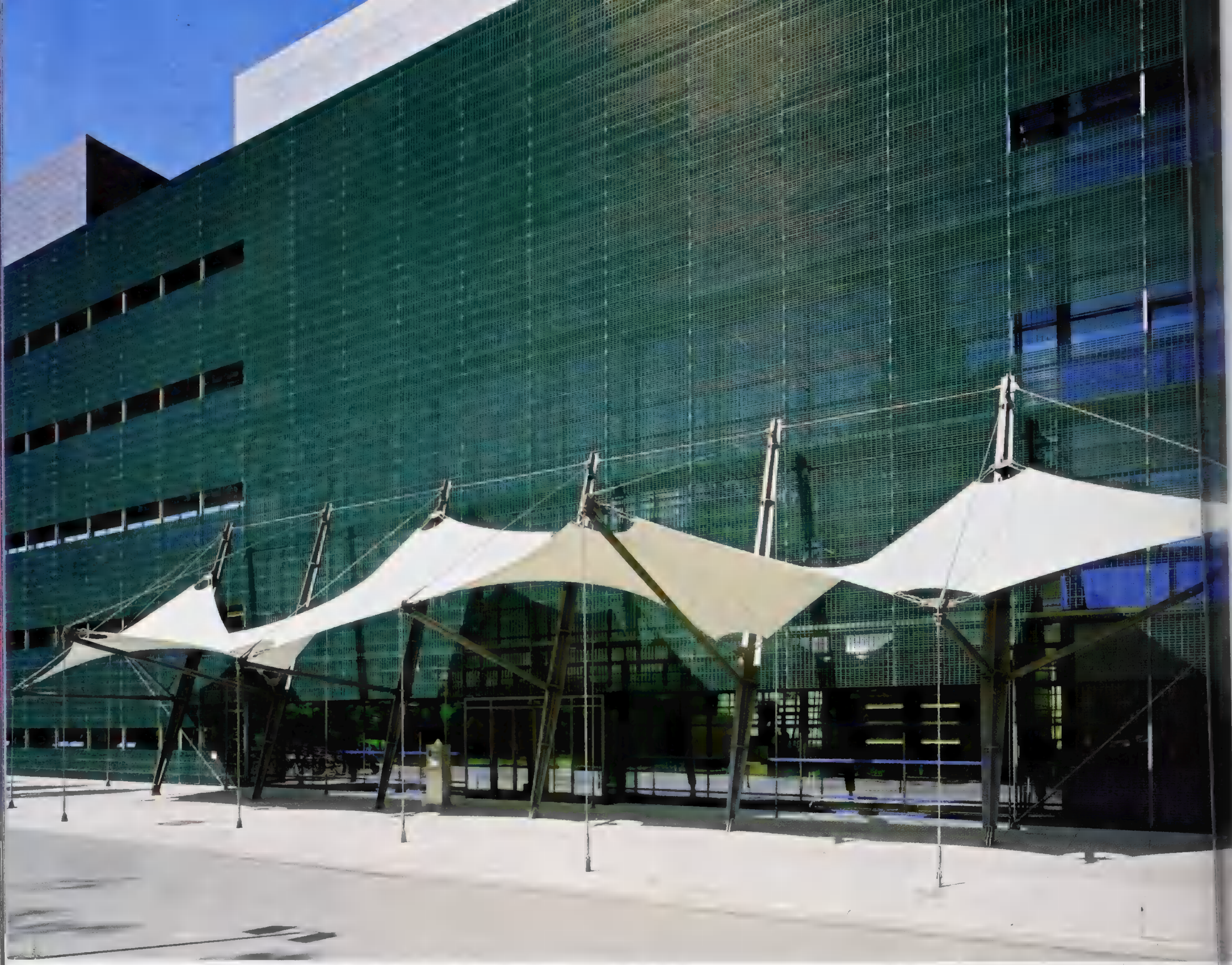


David Cohn is ARCHITECTURAL RECORD*'s Madrid-based correspondent. He wrote the recently published* Young Spanish Architects *(Birkhauser, 2000).*

Project: *Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany*
Architect: *Heikkinen-Komonen Architects—Mikko Heikkinen and Markku Komonen, partners in charge; Janne Kentala, project architect*
Architect of record: *Henn Architekten Ingenieure—Gunter Henn, partner in charge; Rudolf Röglin, project architect; Frank Gebler, site manager*
Engineers: *Ingenieurbüro Prof. Dr. Ing. G. Scholz und Partner (construction engineer); Jaeger, Mornhinweg + Partner Ingenieurgesellschaft (HVAC)*



The central atrium gathers all the public spaces of the institute, with suites of laboratories and offices radiating out from it. This spectacular space occupies the full height and width of the building's center.



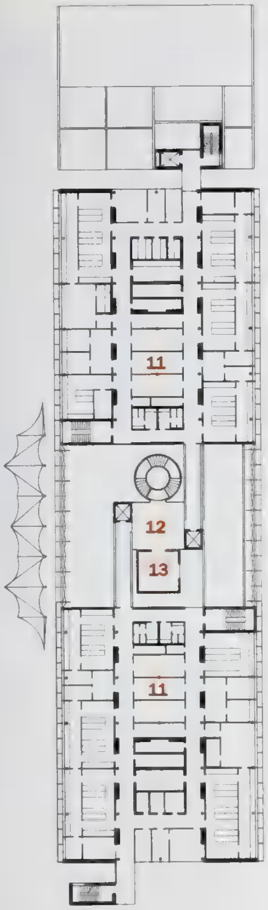
width of the building's center. Its ground floor includes a café near the entrance and a dining hall overlooking a rear garden, while a study library and auditorium are immediately adjacent. On the three upper floors, the space is crossed by concrete bridges that connect the laboratory wings to the atrium's elevators and its wide helical stair, a formal tour de force clad in curving sheets of perforated steel. The bridges, nicknamed "Ponte Vecchios" by the scientists, include informal meeting points and a small seminar room. Simons has banned vending machines from the laboratories, and according to the architects, the waiters for the café's espresso bar were carefully chosen to promote mingling. As Heikkinen observes, "If you want something to eat, you have to go down to the atrium. It becomes a place for people to run into each other. The functional diagram of the building pushes people together."

The research spaces specified by the scientists called for open plans to maximize cooperation. In the eight research units on each floor, scientists share a common office area along the window wall and a large laboratory situated behind it, separated by a glass partition. Heavy equipment is located in a central core and surrounded by a double corridor.

The planners debated how to fit this program onto the site, a deep and narrow former streetcar depot in a quiet residential neighborhood. Komonen recalls, "We tried about 20 different schemes, until we thought of turning the building sideways." They created a new side street that penetrates the lot, and placed the entry there. This decision solved the dilemma, permitting the entry and atrium to be situated in the center of the building, sandwiched between the two laboratory wings. It created an extruded, linear layout for the building and the support facilities located behind it, which includes a service building with delivery docks, housing for lab animals, and a small apartment building for visitors.

The dramatic exterior cladding of the main building was also a response to a functional problem. The layout of the research wings required deep floor plates. "We needed a lot of natural light to reach the interior laboratories. But with large windows on the east/west exposures, you get a lot of heat gain." They decided to sheathe these exposures in a second exterior skin of thick metal grilles, which studies found reduced the amount of solar heat entering the building by 20 percent.

Heikkinen and Komonen first planned to make the grilles of oxidized copper, but they opted for a vibrant green enamel-finished aluminum, which plays off the deep blue of the metal panels that clad the building beneath the grilles, exposed on the narrow street-facing elevation. The startling interaction of these colors, the building's signature formal



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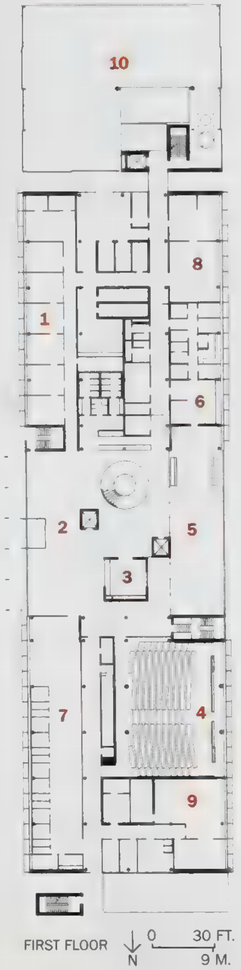
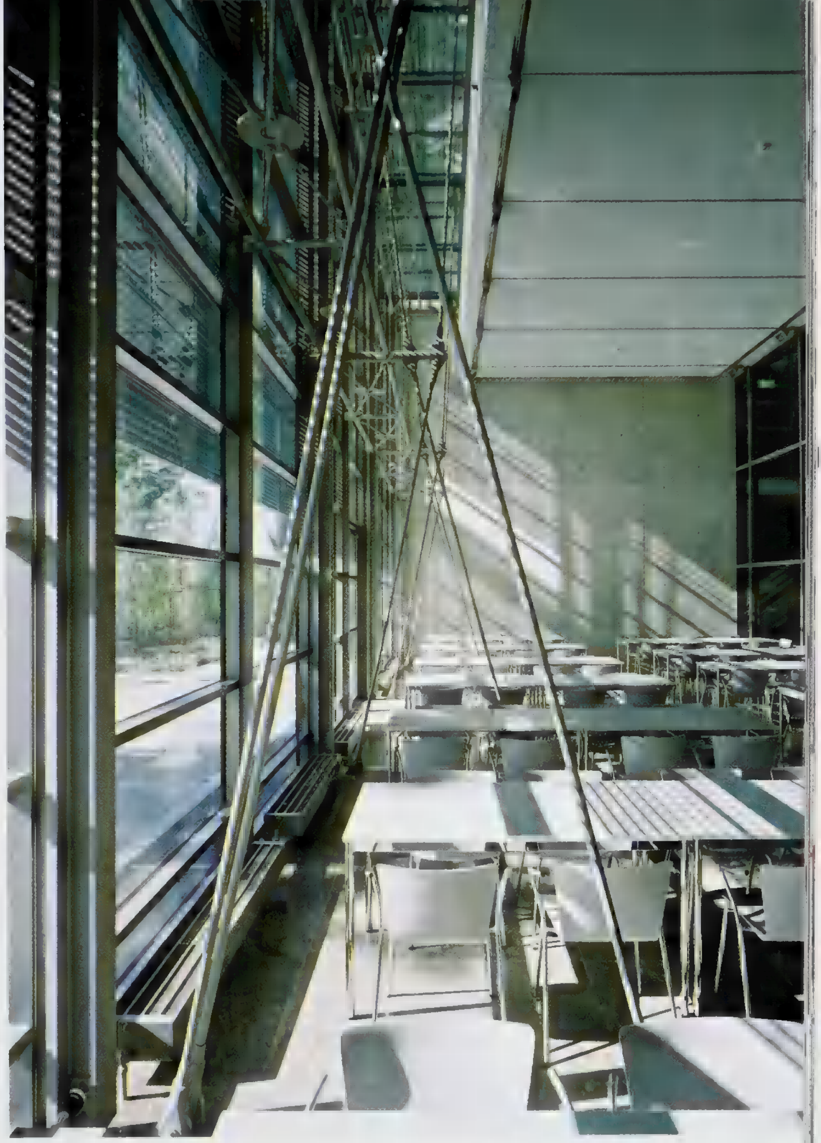
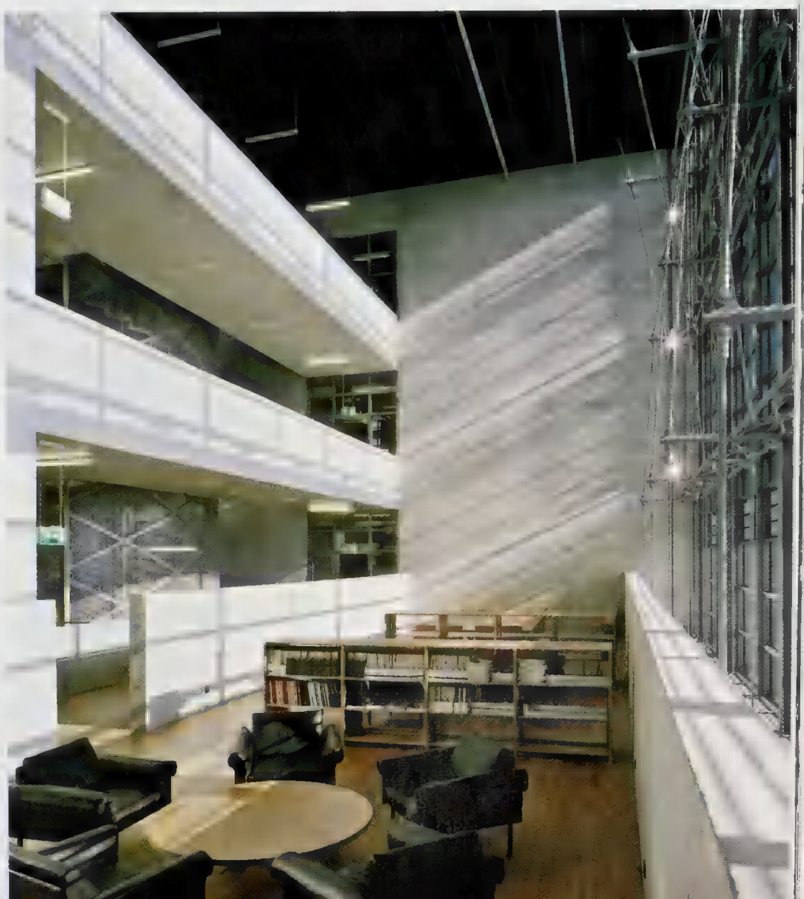


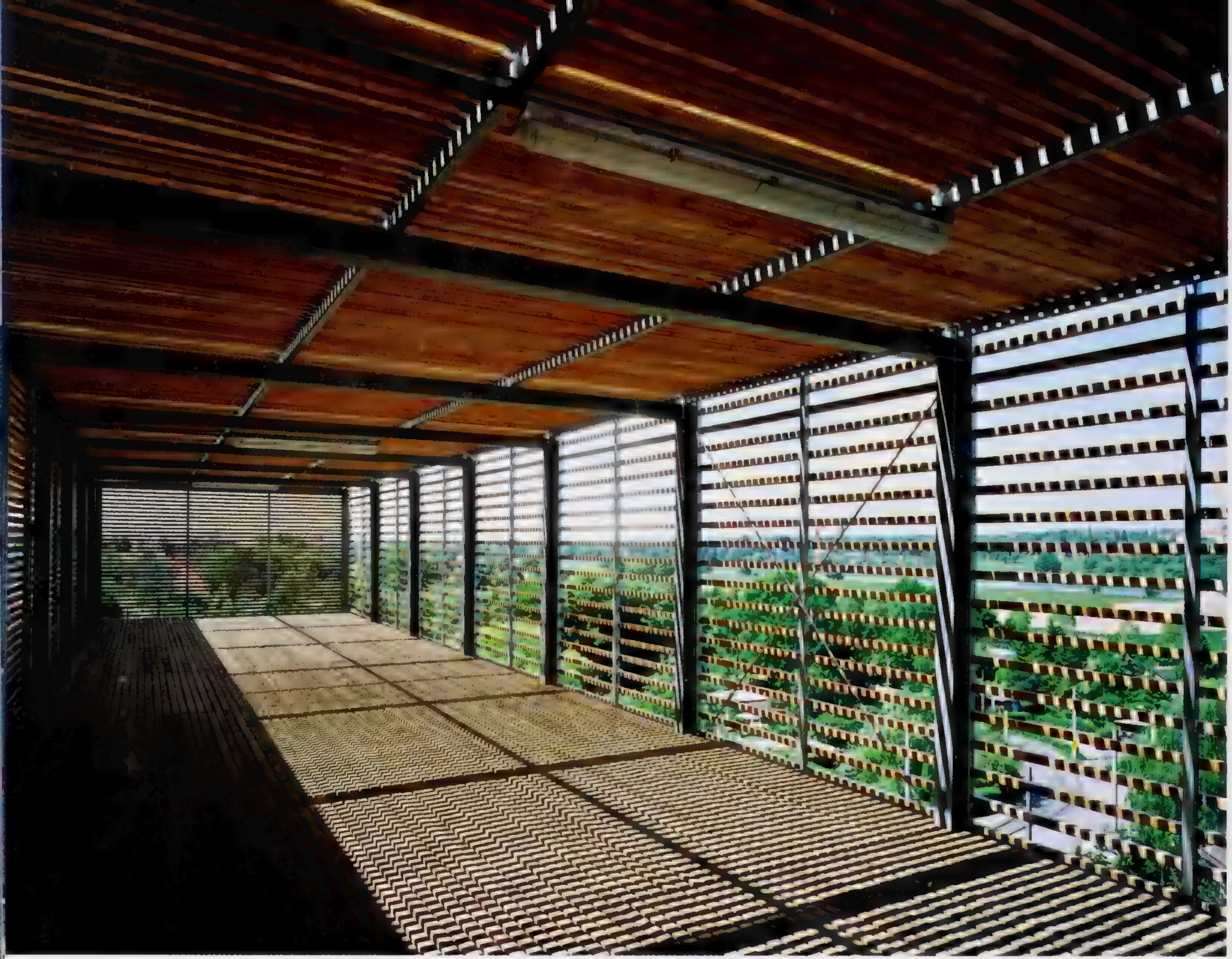
FIRST FLOOR

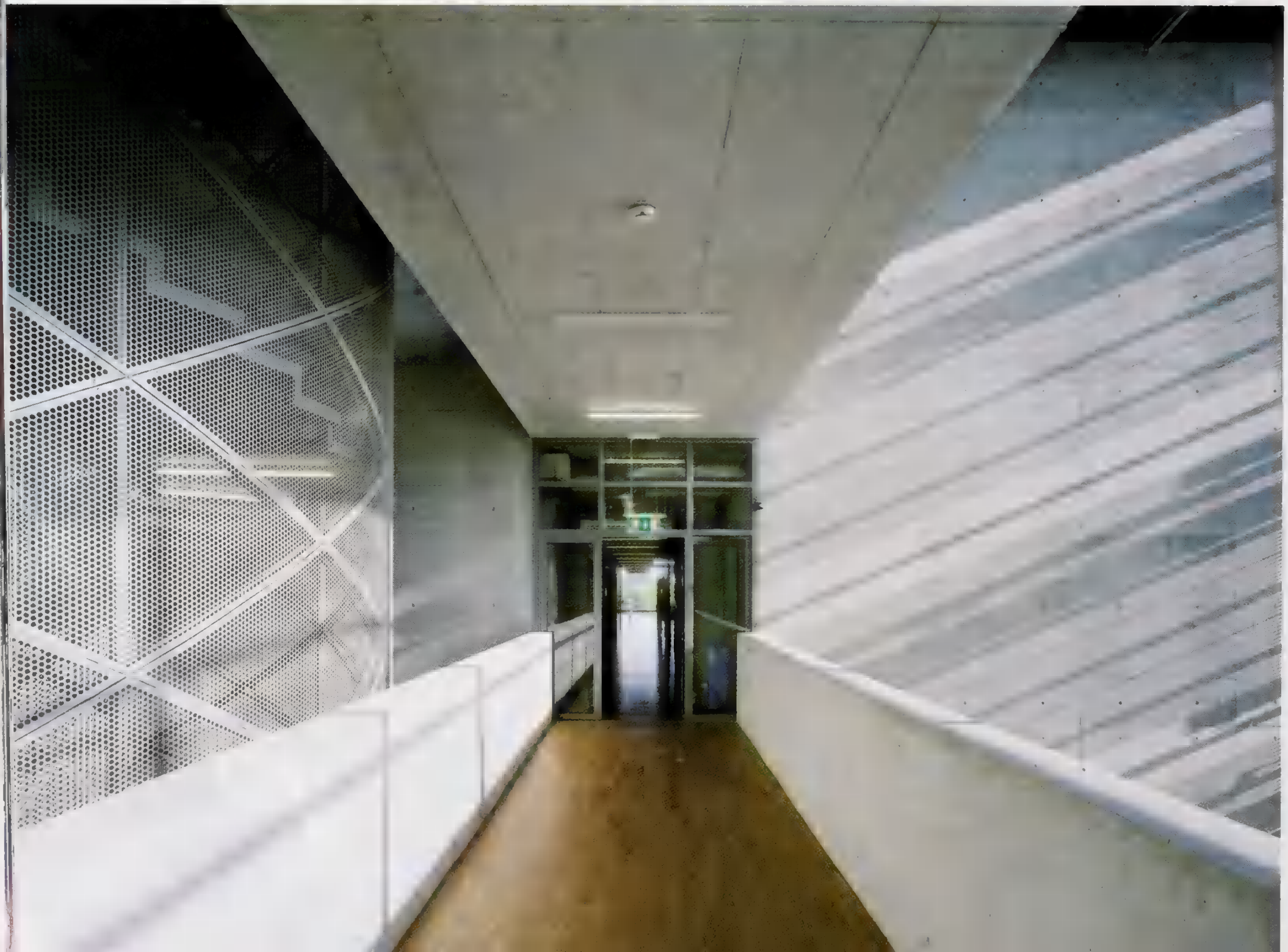
1. *Office*
2. *Foyer*
3. *Information booth*
4. *Auditorium*
5. *Restaurant*
6. *Kitchen*
7. *Library*
8. *Workshop*
9. *Photo lab*
10. *Service area*
11. *Home base lab unit*
12. *Patio*
13. *Meeting room*

To protect the entry, the architects designed a row of canvas sail-like canopies (opposite). In the atrium at the ground floor is a café near the entrance and a dining hall overlooking a rear garden (this page, top), while a study library and auditorium are immediately adjacent (bottom).

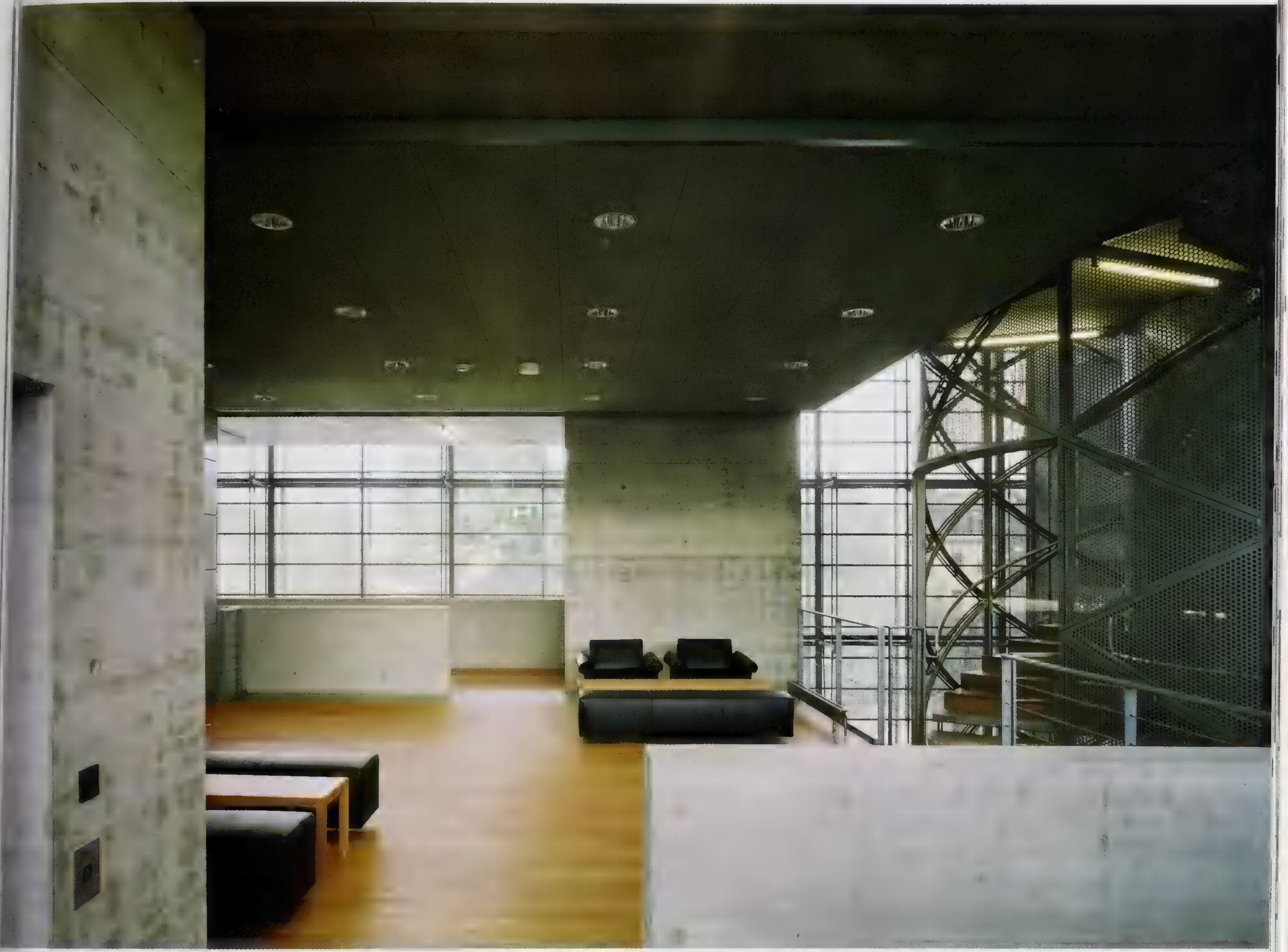








At each end of the roof, a sunporch is enclosed in a latticework of wood (top). On the three upper floors, the space is crossed by concrete bridges that connect the laboratory wings to the atrium's elevators and its wide helical stair, a formal tour de force clad in curving sheets of perforated steel (bottom and opposite).



statement, "makes a simple volume more interesting," they explain.

Only perceived in head-on views of the facade, the blue disappears behind the grilles when seen in perspective. It thus has the disturbingly intimate effect of following visitors as they walk along the facade. The interrupted grilles create a viewing slot for the offices of the laboratories. This gesture transforms the facade into a clear expression of the interiors, with the window slots marking the laboratory wings and the continuous latticework in the center shading the atrium's glass walls.

To indicate the entry, the architects designed a row of sail-like canvas canopies. The remaining exterior finishes constitute sober natural materials, including the zinc cladding of the stair towers at each end of the building and the copper and zinc enclosures of the rooftop mechanical penthouses. At each end of the roof, a latticework of wood frames encloses a sunporch. The handsome landscaping includes a pool that collects runoff rainwater from the roofs, and a garden of loose, rugged local stones.

Heikkinen and Komonen continue the latticework theme in the front and rear facades of the service building and the residence, using different materials to mark each building's character. The concrete walls of the service building are covered with a fine stainless-steel mesh, which matches the metallic color of the delivery bay doors and their exposed steel framing, while the residence is finished in a wood trellis.

Like much of Heikkinen and Komonen's previous work, such as their acclaimed Finnish Embassy in Washington, D.C., the design is essentially a straightforward response to the program and the site, brought to life by its sophisticated skin and dramatic interior atrium. Directness and lack of pretense combine with the handsome detailing and materials and a hip aesthetic sense. In the end, what lingers in the memory are the striking color dissonances of the facade: the hard, deep blue and acid green, highly artificial and yet reminiscent of an evergreen forest under a crisp winter sky. ■

Sources

Facades: *Radeburger Fensterbau*

Exterior cladding: *Lichtgitter (metal mesh)*

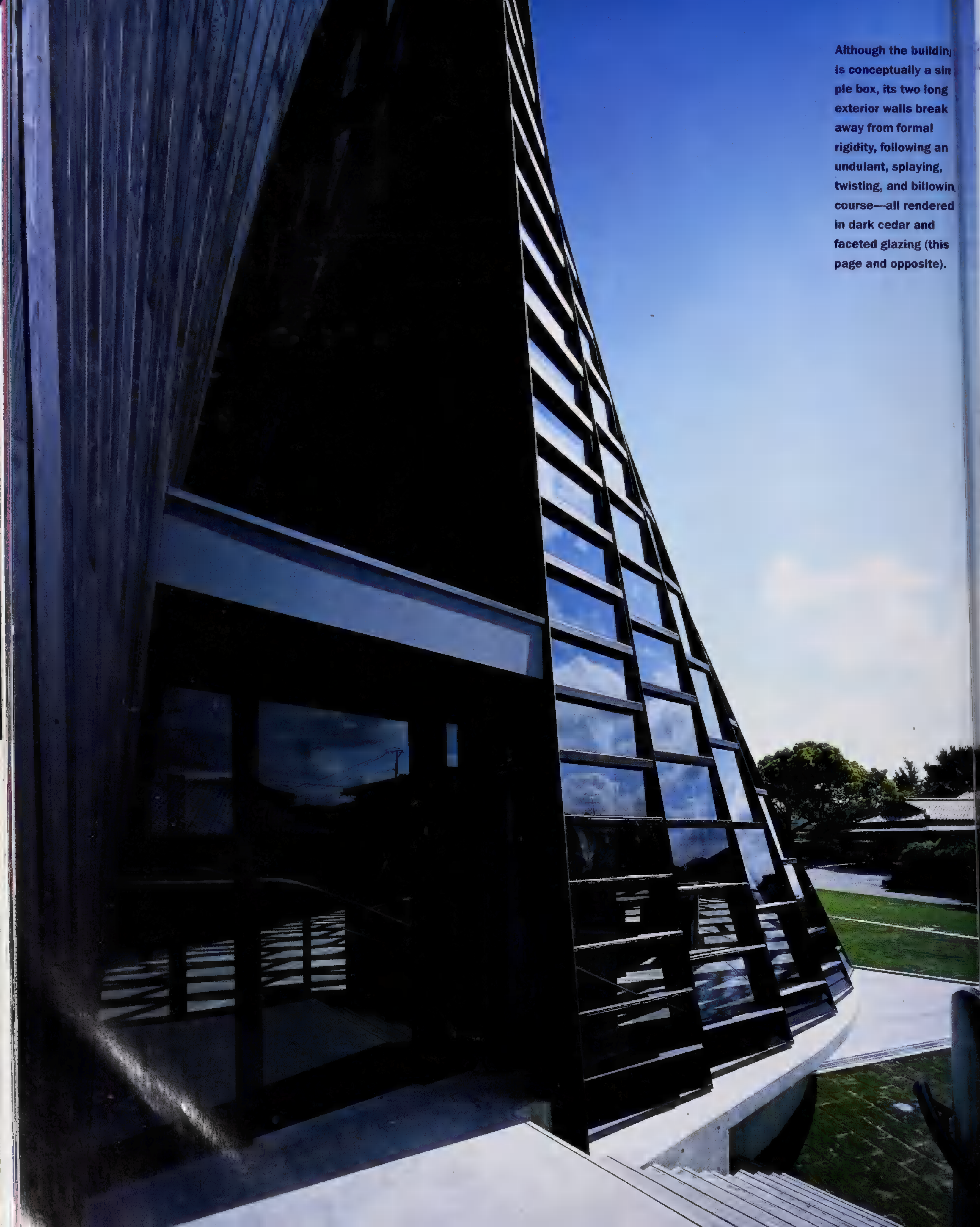
Staircase: *Söll Metallbau Söll*

Acoustical ceilings: *Lidner AG*

Furnishings: *Mobel Oy (wood chairs); Avarte Oy (lounge chairs)*

Upholstery: *Schäfer Ausstattung-Systeme (instrument cupboards)*

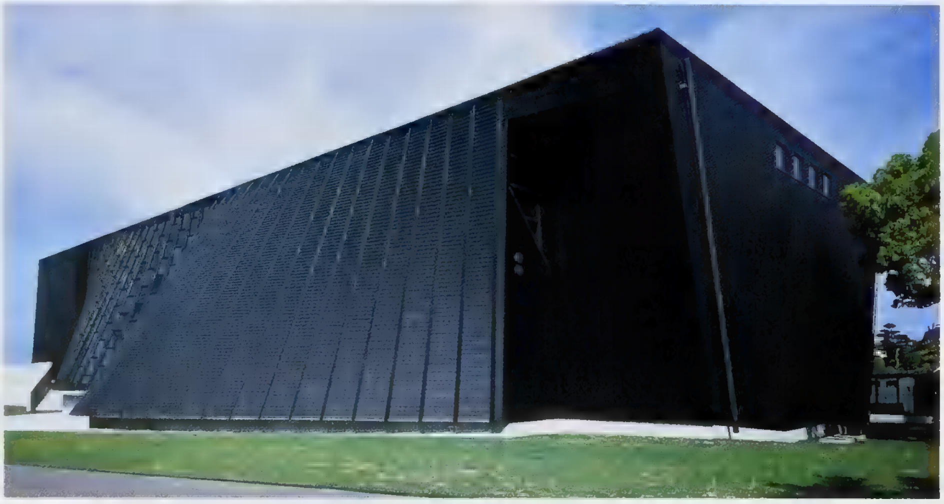
www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

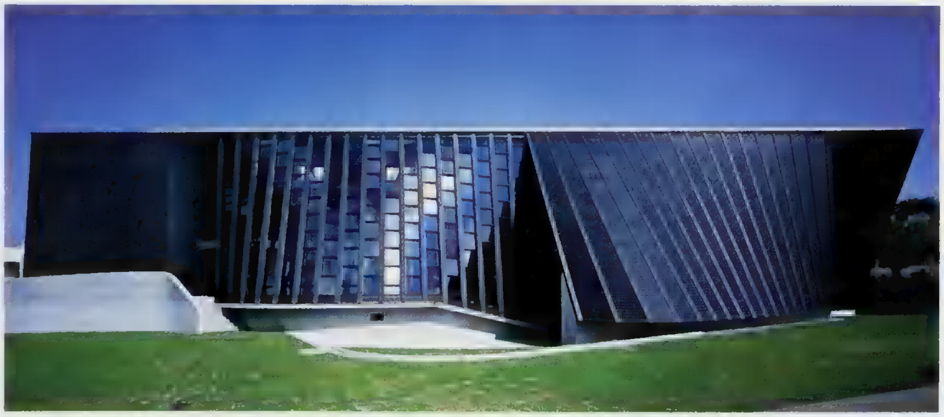


Although the buildin is conceptually a sim ple box, its two long exterior walls break away from formal rigidity, following an undulant, splaying, twisting, and billowin course—all rendered in dark cedar and faceted glazing (this page and opposite).

With his **COMMUNITY HALL** for Reihoku, Japan, architect Hitoshi **Abe** takes a radical leap from the rectilinear

By Naomi Pollock





Until recently, the town of Reihoku's main claim to fame was as the site of the first clash between Samurai warriors and Christian converts. That event occurred some 400 years ago. But with the March 2002 completion of Reihoku's new community center, this town of 9,000, 670 miles from Tokyo, is back on the proverbial map. A landmark for architects, sightseers, and townspeople, the building has emerged as a regional focal point, geographically and symbolically.

Designed by Sendai architects Hitoshi Abe with Yasuaki Onoda, the 10,765-square-foot building is conceptually a simple box, containing a 207-seat theater at its north end, two meeting rooms at its south end, and communal functions in between. But, anchored by the north and south ends and a flat roof, two long exterior walls depart radically from the rectilinear. Creating a bold visual statement, the twisting walls cloak the interior and draw the visitor to entrances within their swirling folds. Like a sculptural object, this billowing form interacts with the urban landscape. Though the building's look is unusual, locals quickly embraced it as a communal gathering place and the town's sole auditorium.

A buffer of greenery and parking sets the structure apart from its surroundings—a densely built mix of postwar single-family houses and commercial properties. The demolition and subsequent relocation of government offices occupying the site left the town with a gaping hole near its center. Uncertain of how to fill it, local citizens turned to Artpolis, their prefecture's "matchmaking" service for pairing up towns with architects.

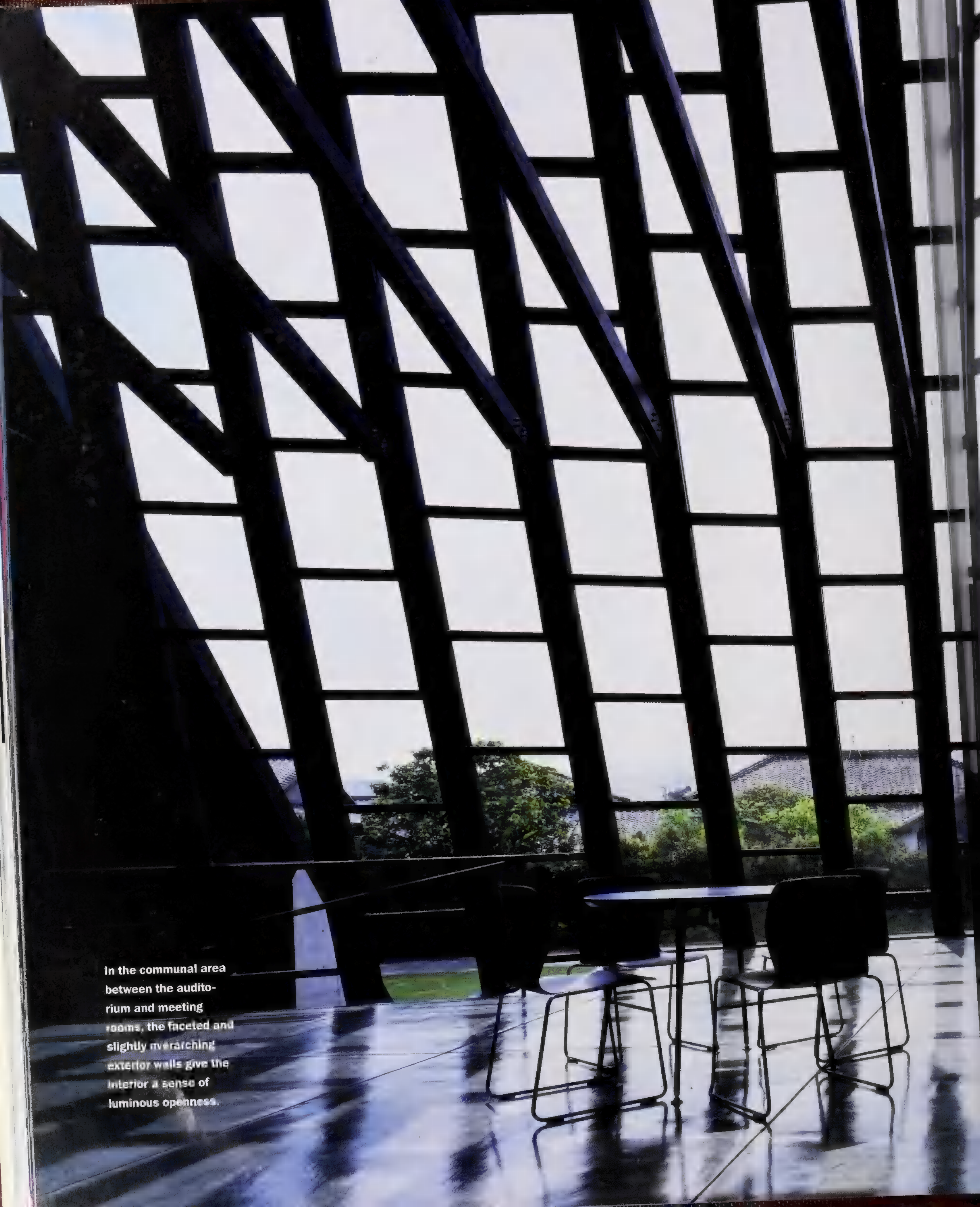
Established in 1988 by Kumamoto prefectural governor Morihiro Hosokawa and his appointed commissioner, Tokyo architect Arata Isozaki, Artpolis aimed to raise the quality of public buildings in the prefecture. The program has invited design-conscious architects from all over Japan and abroad for everything from public lavatories to major museums. It has successfully turned an agricultural backwater into an architectural mecca. Now under the leadership of Tokyo architects Teiichi Takahashi and Toyo Ito, Artopolis dispatched Abe to Reihoku in 1999.

Yet soon after his arrival, Abe began to wonder whether the local folk could agree on what to build, or whether to build at all. Some wanted a concert hall, others public housing, while still others favored an aquarium. After three years of meetings and architect-led workshops, the citizens concluded that they couldn't conclude. So, they settled on a community center, where the people could continue to exchange ideas and realize their dreams.

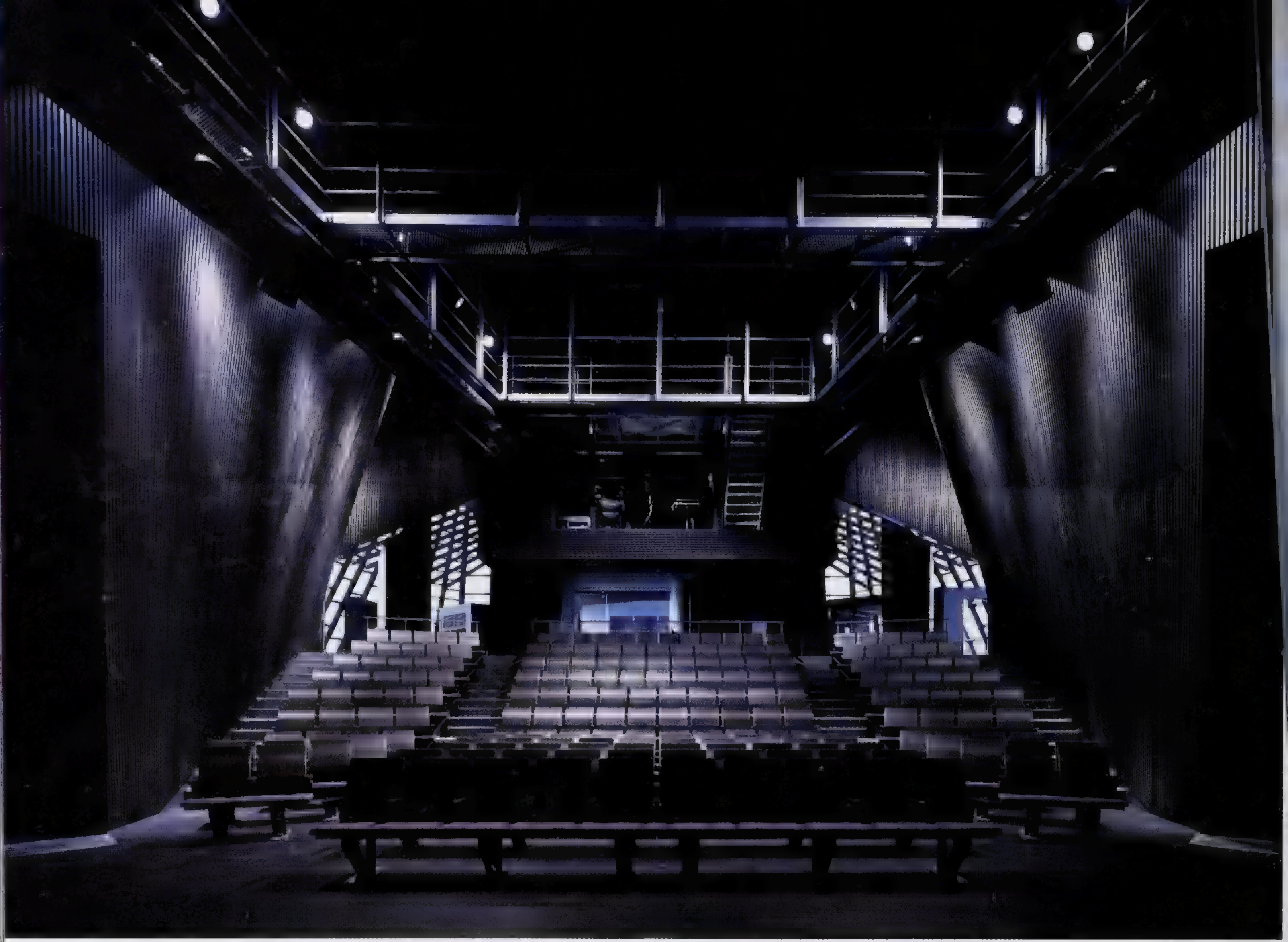
Though protracted, the process helped clarify ideas for the building. As a public amenity, it had to be economical, hence compact and multifunctional. Conceptually, Abe envisioned overlapping circles, one centered on the paired meeting rooms and the other on the theater—end zones that could operate independently or in tandem. The area between them would house shared functions, including an information center, a lounge with Internet access and a small kitchen, and the Volunteer Bureau,

Naomi Pollock is RECORD'S *Tokyo-based correspondent.*

Project: *Reihoku Community Hall*
Architects: *Atelier Hitoshi Abe and Yasuaki Onoda*
Engineer: *TIS & Partners (structural); Sogo Consultants (mechanical)*
Lighting: *Masahide Kakudate Lighting Architect & Associates*
General contractor: *Nakamura*

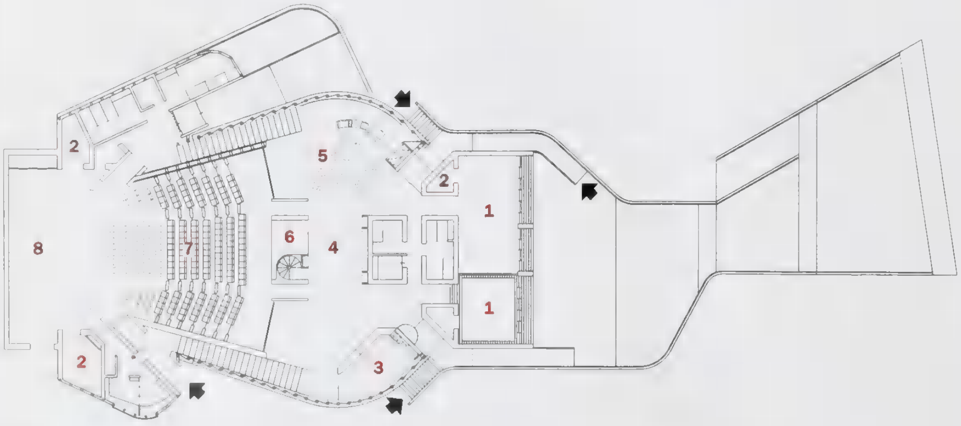


In the communal area between the auditorium and meeting rooms, the faceted and slightly overarching exterior walls give the interior a sense of luminous openness.



1. *Meeting*
2. *Storage*
3. *Office*
4. *Information*
5. *Café*
6. *Volunteer Bureau*
7. *Auditorium*
8. *Stage*
9. *Controls*
10. *Mechanical*

The theater (above) is the town's sole auditorium. Converging slightly as it ascends, the stairway (opposite, left) snakes between the curving exterior walls and the shell enclosing the auditorium. The constant play between dark and light makes the journey through this modestly scaled building richly experiential and varied (opposite, right).



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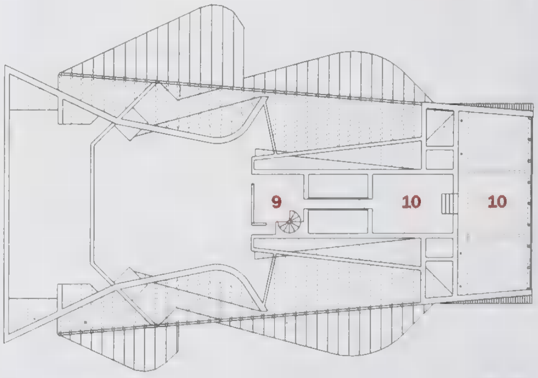

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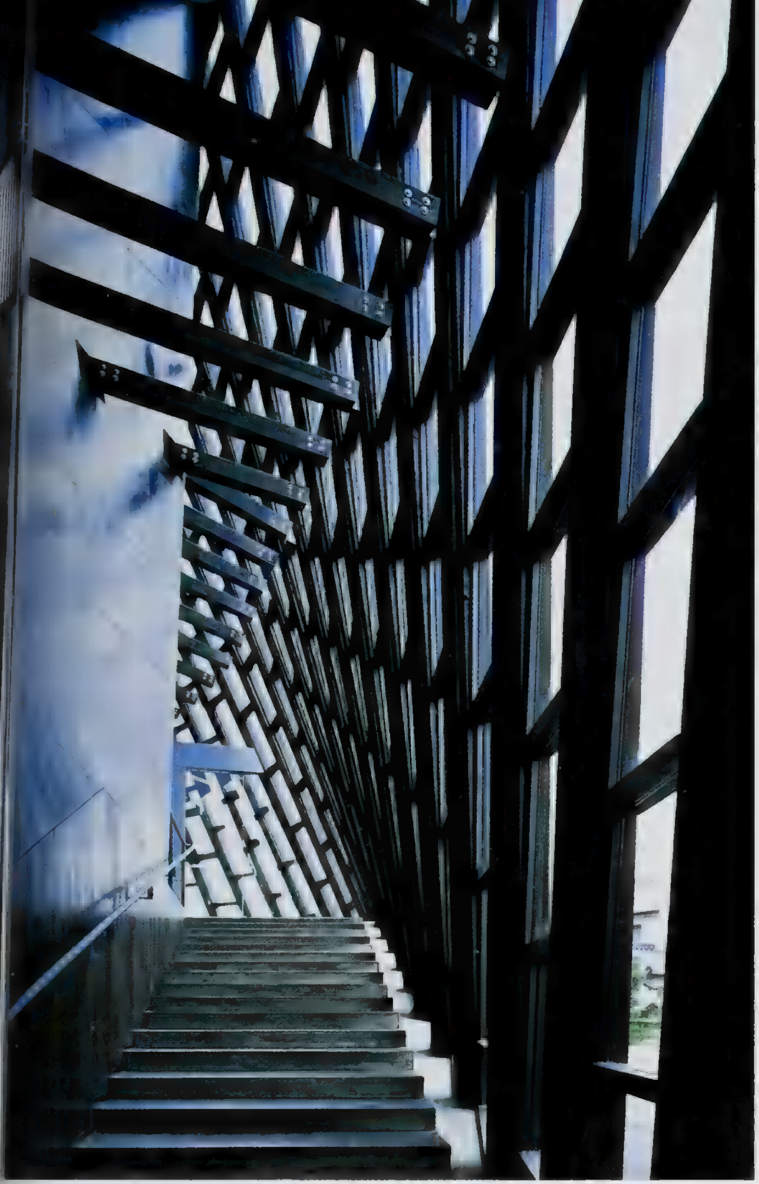
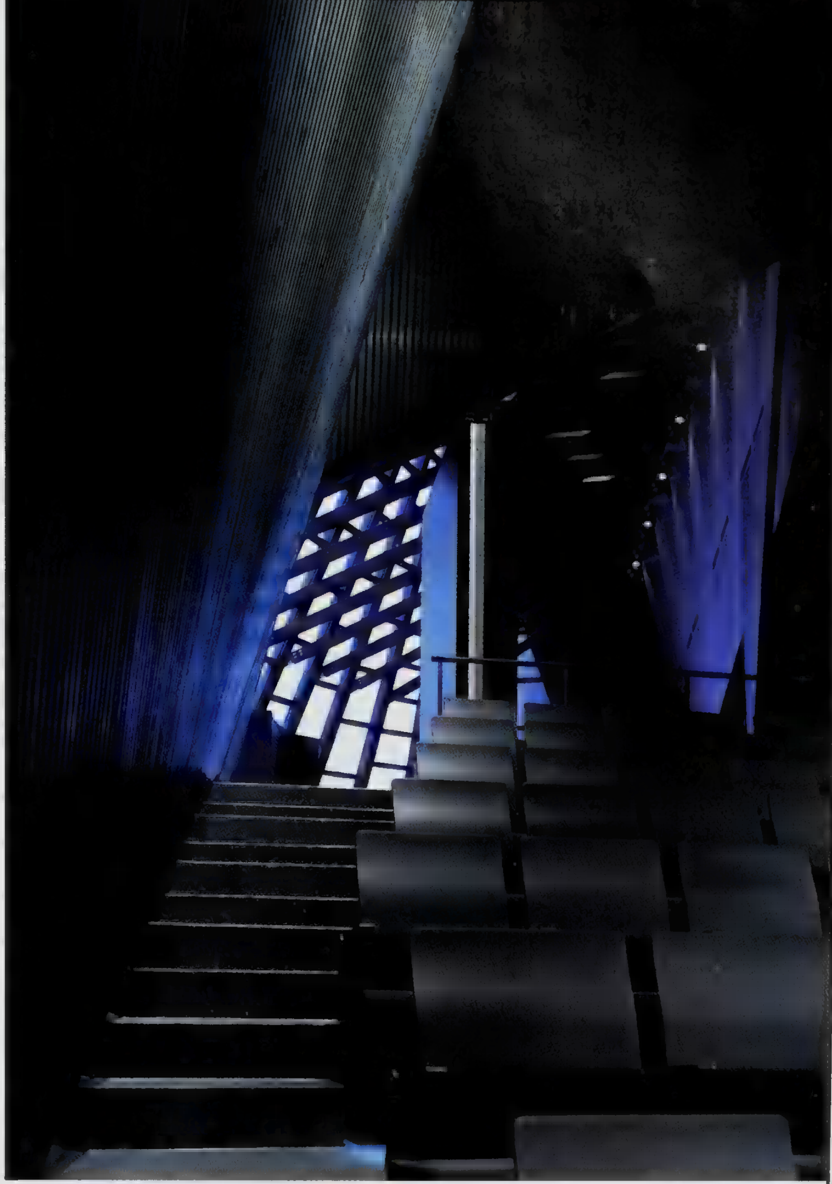




the community hall's nerve center. As built, the bureau contains a glass-enclosed box, housing controls for theater lighting and audiovisual displays, as well as managerial services for the entire building, all staffed by locals.

Transparent and ambiguous borders characterize the interiors, in which corridors were kept to a minimum, leaving the functional components loosely defined and allowing each to flow into the next. The architects even blurred the theater's boundaries with movable partitions that can open it completely to the communal central spaces. Though the theater is the building's largest component, it is not dominant. Catering to many different users, Abe kept the community center as nonhierarchical as possible, even dispensing with a main entrance in favor of four doorways, a loading dock, and an *engawa* (a transitional indoor-outdoor space) off the meeting rooms, reinforcing direct interior-exterior links.

Another way Abe unified the building was by wrapping its entire interior in the undulating outer wall, which he composed of glass and locally grown cedar. Inside as out, this mantle defines a single volume, pulling together everything from the 32-foot-high trapezoidal theater down to 7½-foot-high lavatories and dressing rooms appended to it.

The exterior wall incorporates three construction types, distinguished by varying proportions of glass to wood. To let the walls twist, turn, and splay outward from the top, Abe made them out of 35-inch-wide faceted wood segments, each bracketed by laminated timber verticals. The complicated, tilted positions of the verticals demanded installation by the fabricator. But once these elements were in place, local carpenters could add the glass panes and horizontal wood supports. Where the elevations torque most, the smallest glass panes and most closely spaced horizontal bars were necessary. Though the gradations may appear designed for visual effect, Abe says they merely reflect "the limitations of the materials."

Non–load bearing, the exterior curtain walls hang from roof beams, which, in turn, cantilever off the building's primary structure, a wood shell system, fortified by beams to resist lateral forces. This interior shell—a wavy, wood-paneled surface that flattens out at either end of the building—embraces the auditorium and meeting rooms. Another layer of tilting wood walls lining the auditorium serves the acoustics.

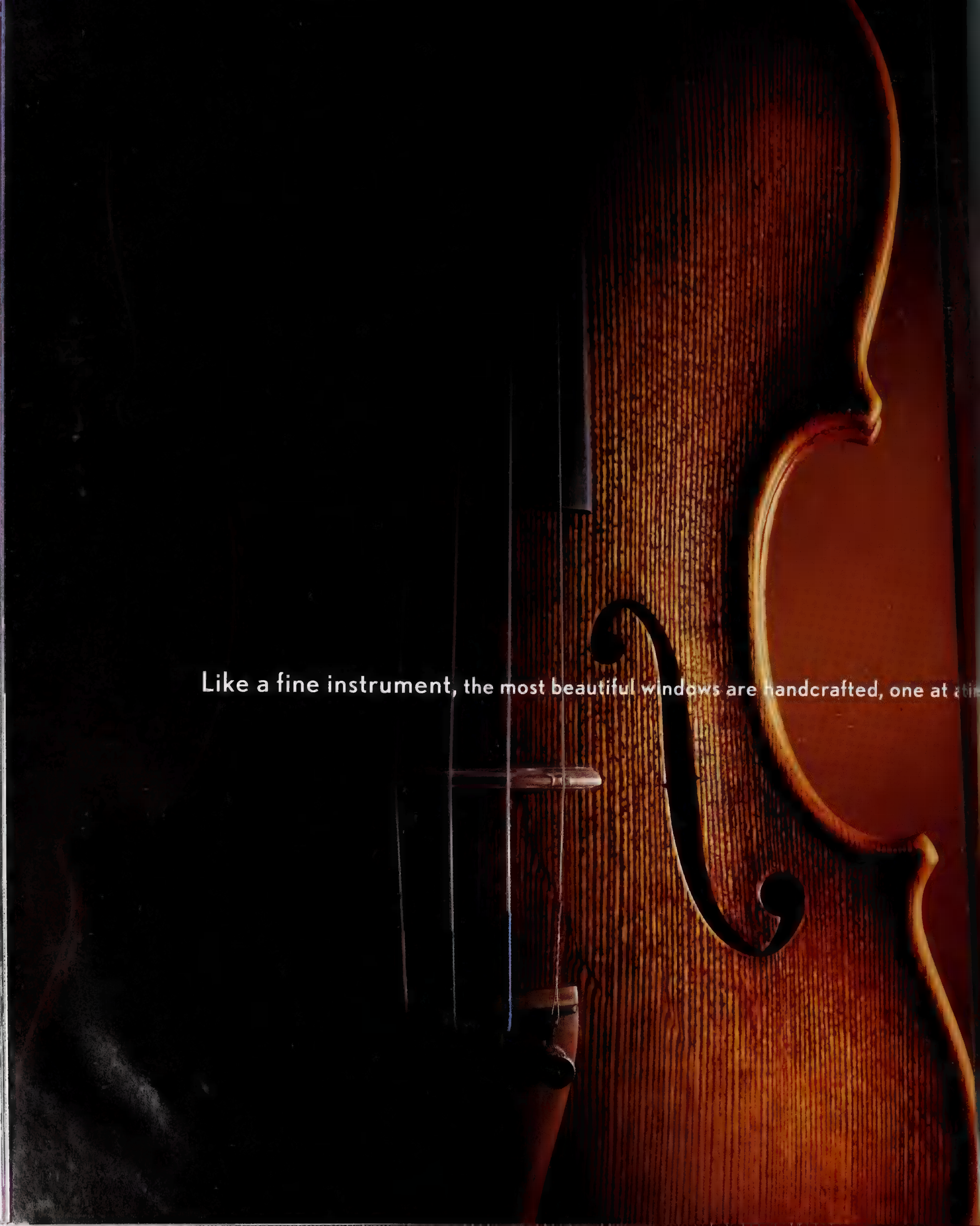
Though the center has already hosted a concert for a renowned violinist, the town's ambitions for the building are humbler. High school bands and *omiai* parties, where prospective brides meet grooms, are more its speed. "The town can use the building to express itself," says Abe. While many of Japan's recent public buildings have been labeled "*hakamono*"—beautifully designed, but empty, boxes—Reihoku Community Hall may avoid this pitfall by remaining a simple but well-used container. ■

Sources

Wood structural system: *Myazaki Wood Tech (laminated timber)*

Epoxy paint: *ABC (Chemcrete EP)*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.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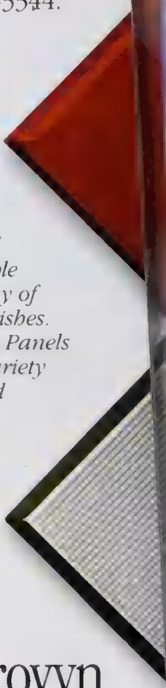
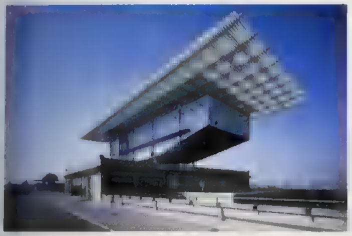


SMALL MUSEUMS

Identity with Integrity

MUSEUM EXPANSION IS PROCEEDING, IN SPITE OF A TROUBLED ECONOMY. QUESTIONS OF GROWTH LINGER ABOUT NEW BUILDINGS AND ADDITIONS. WHEN IS SMALL JUST ENOUGH?

By Suzanne Stephens



1.

Turin, Italy

On top of Lingotto, the former Fiat factory, Renzo Piano Building Workshop has completed the Pinacoteca Gianni e Marella Agnelli for the display of art.

2.

Manchester, England

Ian Simpson has designed a singular object with an interior funicular for a small museum in the center of town devoted to the subject of the city.

3.

Springfield, Massachusetts

The Naismith Memorial Basketball Hall of Fame, by Gwathmey Siegel, is part of an effort to bring life back to the riverfront of a small city.

4.

Wayzata, Minnesota

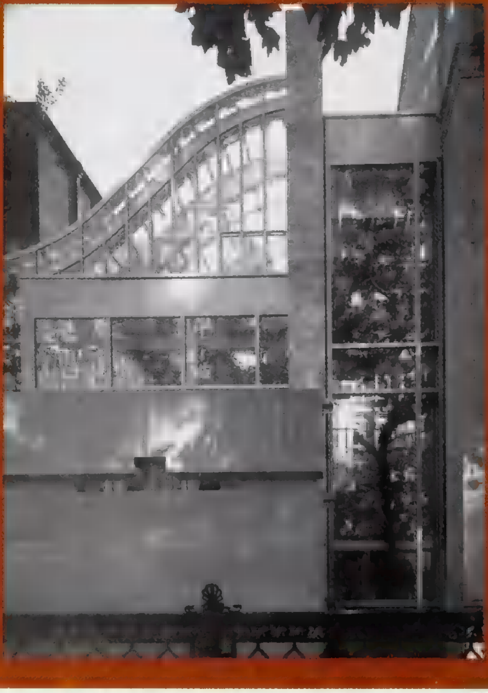
James Dayton has designed the Minnetonka Center for the Arts as a villagelike cluster of discrete forms for showing and making art.

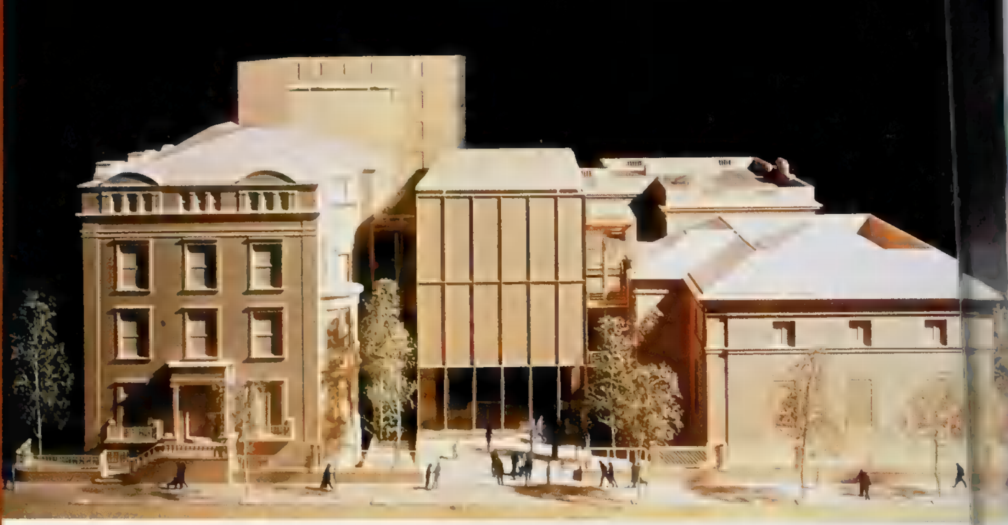
If the museum boom of the 1980s and 1990s is over, you wouldn't know it. A staggering number of the museums built or enlarged in the past two decades are going through new expansions, some involving tear downs of not-so-old work: Renzo Piano is designing an addition to Richard Meier's High Museum, in Atlanta, completed in 1983; the Chicago Art Institute, where Hammond Beeby Babka designed a new wing in 1988, is having Piano do one as well; the Virginia Museum of Fine Arts, in Richmond, had Hardy Holzman Pfeiffer design a wing in 1985, and now has hired the London-based American architect Rick Mather to come up with yet another. Last year Rem Koolhaas won a competition (now on hold) to redo the Los Angeles County Museum of Art, which called for obliterating the existing structures, including Hardy Holzman Pfeiffer's expansion of 1986. And then there is New York City's Museum of Modern Art, expanded and remodeled by Cesar Pelli in 1984: Yoshio Taneguchi is demolishing most of Pelli's building for his new, mega-size one. Asia House, in Manhattan, which hired Edward Larrabee Barnes to design its museum in 1980, commissioned Bartholomew Voorsanger to redo much of it in 2002. And Voorsanger's own 1992 expansion of New York's Morgan Library will be torn down for a larger version by (again!) Renzo Piano.

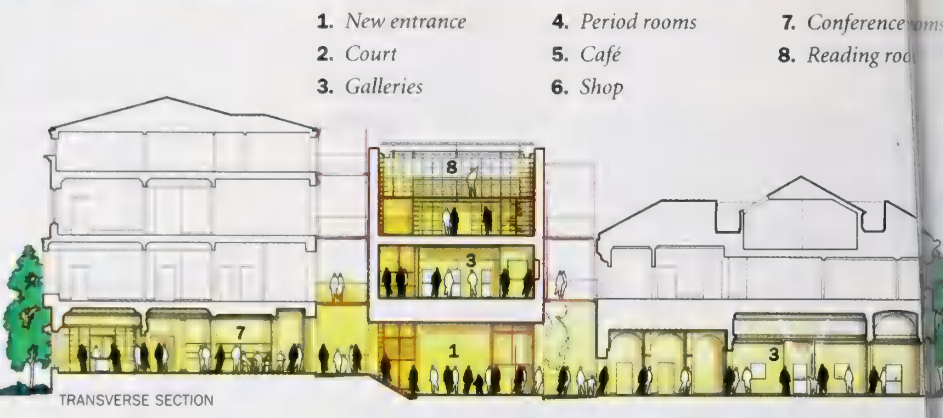
What can we make of all this? In some cases, it could be (as until just yesterday) a flush economy. In other cases, it could be that clients (museum boards and building committees) don't know what they want and how to get it in the first place. Or perhaps it is the trap of time and fashion: About the moment the architect finishes his or her first phase, the project looks out-of-date in a very competitive museum world. But what do museums do now that the economy has soured and so many projects are in design development or working-drawing phases?

At the heart of all these questions is the issue of growth. In times of easy money, it is hard for a museum, basking in its popularity, to ask if it is better off not growing too much. The observation that the museum often depends on the intimacy of the relationship between the object on display and the viewer is easy to overlook. In this context, the Morgan Library, a small treasure of a museum with master drawings and prints, rare books and manuscripts in its famed collection, provides an interesting case to analyze. Because it built an addition only 10 years ago, which is now being torn down for a larger one, and because a number of "name" architects have been involved in its expansion plans—including Renzo Piano—it becomes all the more intriguing. Although conclusive insights won't be possible until the Piano expansion is complete, the questions raised now are worth thinking about.

WWW For additional small museum projects, and more information on the people and products involved in the following projects, go to Building Type Study at **architecturalrecord.com**.







The first time around

In 1988, when the Morgan Library, located on 36th Street and Madison Avenue, was able to acquire an Italianate brownstone on 37th Street, which had once been occupied by J. P. Morgan's son, the board of directors placed Bartholomew Voorsanger, FAIA, and his firm (then Voorsanger and Mills) in charge of its expansion. Voorsanger was to link the 37th Street brownstone, built in 1852–53 by Isaac N. Phelps Stokes, to the original library on 36th Street, designed in 1906 by McKim, Mead and White, and the 1928 Benjamin Wistar Morris Annex at the corner of 36th and Madison Avenue, on the site of J.P. Morgan's own brownstone house. Voorsanger's most visible contribution was the Garden Court, with a curved glass roof, placed mid-block in the cluster of historic structures.

The 37th Street brownstone was originally intended to be renovated for galleries, but the need for heavy-duty fire-safety walls made the task prohibitive. So the 37th Street building was renovated for offices. Because of the limited budget—a total of $30 million for both the purchase of the brownstone ($15 million) and the remodeling and Garden Court—the expansion was divided into two phases, of which this was the first.

Voorsanger's Garden Court, with a café and ample space for a party hall for hire, proved to be a moneymaker. Corporations and organizations began to rent it for an average of $5,000 to $20,000 a night. The public and the local Murray Hill neighborhood flocked to the museum to enjoy the rare interior sunlit oasis, which was gradually thickened with plants and trees. Attendance increased from about 100,000 a year before the 1991 expansion to 220,000 in 2002.

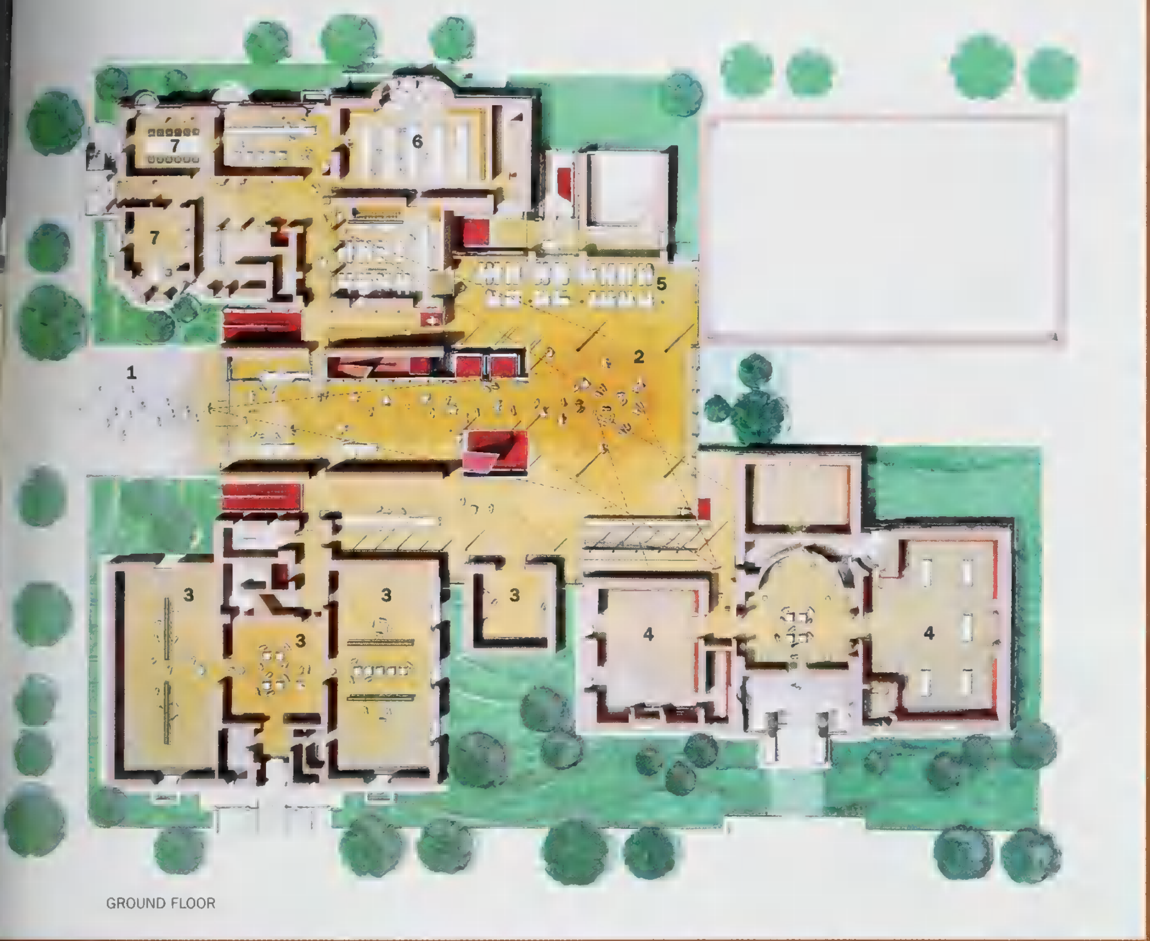
In spite of popular success, Voorsanger's glazed curvy roof did not sit well with many in the architecture community. It appeared too finicky in a historicist Baroque way, especially as seen against the growing predilection for a cleaner, sparer, neo-Modern architecture. There were architects who would speak of the Voorsanger addition as being "too fashionable." What they meant, of course, was that it was out of fashion.

A failed competition

In the late 1990s, the board of the Morgan, under the leadership of Charles Pierce—named the director just before Voorsanger's arrival on the scene—decided to expand again. The economy was soaring. Yet Pierce and the board did not turn to Voorsanger for the second phase of his original master plan, but hired Beyer Blinder Belle to determine future needs. The desire was expressed for more storage space, a new reading room that could take advantage of current technology, along with more gallery area. Although Pierce graciously invited Voorsanger to compete with others for the commission, Voorsanger graciously turned the opportunity down and concentrated instead on radically altering Edward Larrabee Barnes's Asia Society. (Architecture, thy name is Irony.)

By 1999, the Morgan had narrowed the list of architects to Steven Holl, Tod Williams and Billie Tsien, and Hardy Holzman Pfeiffer. While no architects were on the Morgan Library's Building Committee, it brought in Paul Goldberger, the architecture critic of *The New Yorker*, to advise. "He talked about the process of being a good client," says Deputy Director Brian Regan, "and put the various architectural styles in a context so that we could think about them intelligently."

The designs submitted by the three teams all did away with Voorsanger's Garden Court. Yet none of the schemes by the three shortlisted architectural firms set the Morgan board on fire. This was, indeed, a quandary. The Morgan board remembered that Piano had declined to be part of the competition. However, he had mentioned in parting that if the board had second thoughts, they should call him. Magic words. The Renzo Piano Building Workshop (with Beyer Blinder Belle) got the job.



The Morgan Library expansion first began in 1988 when the brownstone on 37th Street and Madison Avenue, built by Isaac N. Phelps Stokes in 1852–53, was acquired by the library. In 1991, Bartholomew Voorsanger, FAIA, linked the building to the Benjamin Wistar Morris Annex of 1928 on 36th Street, and to the McKim, Mead and White library built in 1906 (model, opposite, top left). The most visible piece was a glazed Garden Court (opposite, bottom left), which contains a café. Now the Morgan is replacing the addition with one by the Renzo Piano Building Workshop (model, opposite, top right). A new structure containing a reading room and gallery, with storage vaults below ground, will be built in the space, leaving a rear atrium of 3,800 square feet. Another link, a 20-foot cube, will be built between the 1928 annex and the McKim, Mead and White building for additional exhibition space.

Piano redux

Piano has come up with a 69,000-square-foot expansion plan that is scheduled to go into construction next May [RECORD, April 2002, page 26]. Although it is not grandly ambitious, it *is* ambitious: The Voorsanger Garden Court—plus additions cloned by architects Alexander P. Morgan in 1962 and Platt, Wyckoff and Coles in 1975 at the rear of the Benjamin Wistar Morris Annex—will be torn down for a new entrance and a three-story-high structure containing a gallery and a new reading room. The current entrance on 36th Street will no longer be used, a move that has spurred the criticism that the public arriving at the new entrance on Madison Avenue will have little visual knowledge of the exteriors of the Benjamin Wistar Morris Annex and, especially, the McKim, Mead and White building extending along 36th Street.

Nevertheless, Piano won points with preservationists for placing so much of the expansion underground: A four-story basement containing stacks and totaling 35,800 square feet is projected below grade. The entire complex is to be built of glass and steel, including plate-steel walls, with the color of the paint to be determined.

The Morgan hopes to attract $100 million in donations for the project, plus a $25 million endowment for maintenance. Although it has obtained pledges of $62 million, the board may have to borrow against the unrestricted portion of its current endowment. Drilling through the bedrock for the vaults starts next summer, when the library closes down for several years. Which means no parties, no income, and the staff has to move to rented space. Will the sacrifice pay off?

The theory goes that the architectural success of a building hinges on the relationship between the client and the architect. Indeed, the various moves by the Morgan—including tearing down a 10-year-old building—will not guarantee its place in history as a client with a clear and definite vision. However, the choice of Piano, who is at the top of the international heap right now and is known to create discreetly incandescent museum galleries, is smart. And, it seems, the Morgan is not running into some of the same roadblocks as other museums that have imported stars: the architect who has difficulty traveling from afar, or who doesn't seem to listen to the client, or who assumes that construction techniques in the United States are on the same level as in his or her country.

From the client's side, Pierce and Regan can't speak highly enough of Piano. Besides the architect's legendary charm, they note that he is focused, can shift gears quickly, knows how to use time and distribute work. As Regan adds, "He makes us feel we have his full attention." Such reports bode well. But the numbers on the price tag seem optimistic. And budget cuts made at the end can be killers—especially for the sort of architecture that depends on quality materials, exquisite detailing, luminous lighting, and excellent craftsmanship. And will the museum attract the 400,000 people a year it hopes to? Hard to know. Right now it doesn't seem as if the large indoor court in Piano's scheme will have as much greenery as the current one does. If the new design lacks appeal as a garden oasis (and as a party hall), the public may not notice how divine the Piano enlargement is.

The question relates to all museum growth. This rush to expand may result in the integrity of the original museum being lost. Victoria Newhouse, author of *Towards a New Museum* (1998), warns, "The Morgan is in danger of losing the personal feeling of a house-museum that historically has been its prime attraction."

When does a "small" museum start getting too large? On the following pages we show four museums that are small and not ashamed of it. Each achieves an identity through distinct architectural form. They can be seen in an hour or two, without museum fatigue or disorientation. And right now, they have no expansion plans. ■

Pinacoteca at Lingotto

Turin, Italy

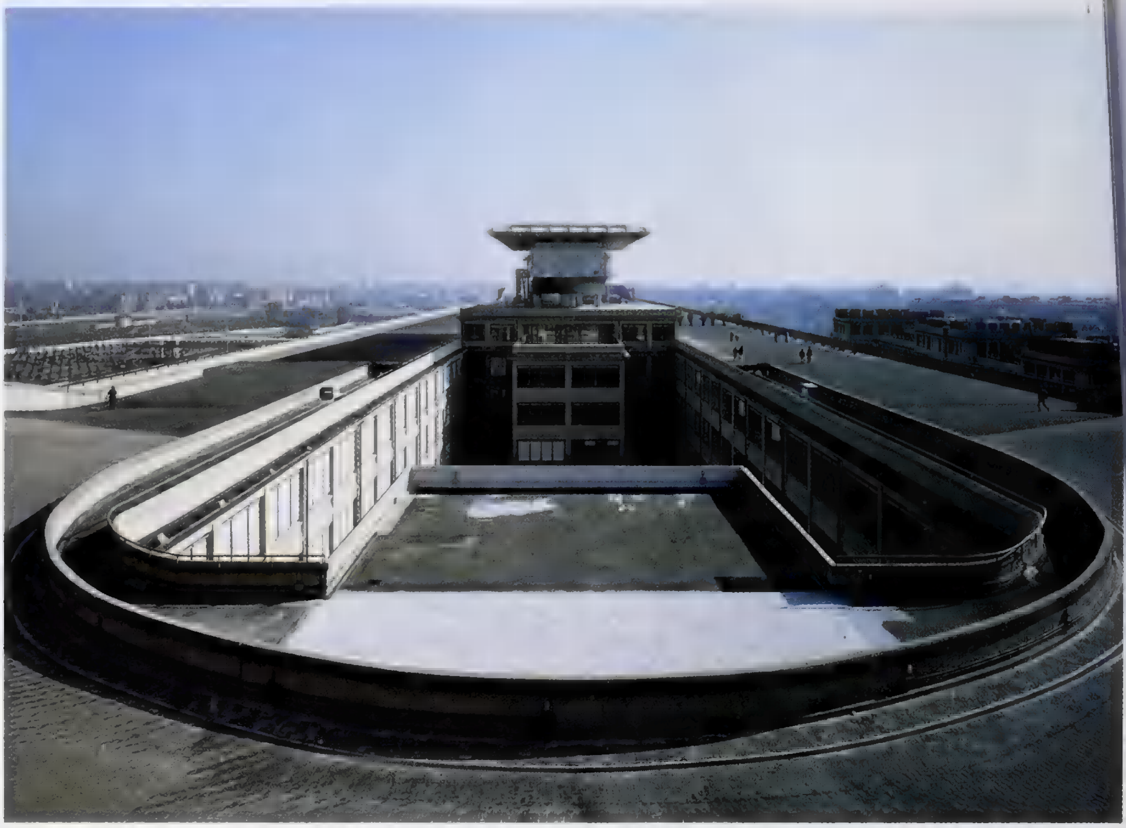
1

RENZO PIANO BUILDING WORKSHOP BRINGS A CONSUMMATE CRAFTSMANSHI TO THE CREATION OF A SMALL MUSEUM IN THE LINGOTTO FACTORY.

By Niccola di Paderno and Suzanne Stephens

Architect: *Renzo Piano Building Workshop—Renzo Piano, principal; Maurits van der Staay, associate in charge; Antonio Belvedere, Kees van Casteren, Dan Dorell, Federico Florena, and Bernard Plattner (senior partner), team*
Client: *Lingotto and Palazzo Grassi*
Consultants: *RFR ("flying carpet" roof structure); Fiat Engineering (primary structure and HVAC); PI Greco Engineering (fire); P. Castiglioni (lighting); Studio Inarco (consulting architect)*
Size: *35,000 square feet*
Cost: *Withheld*
Completion date: *September 2002*

Sources
Steel structure and skin: *Clemente Fratelli*
Aluminum facades (existing building): *Lorenzon Technic System*
Glass roofing: *Guiliani Infissi SCRL*
Internal glass partitions: *Unifor*

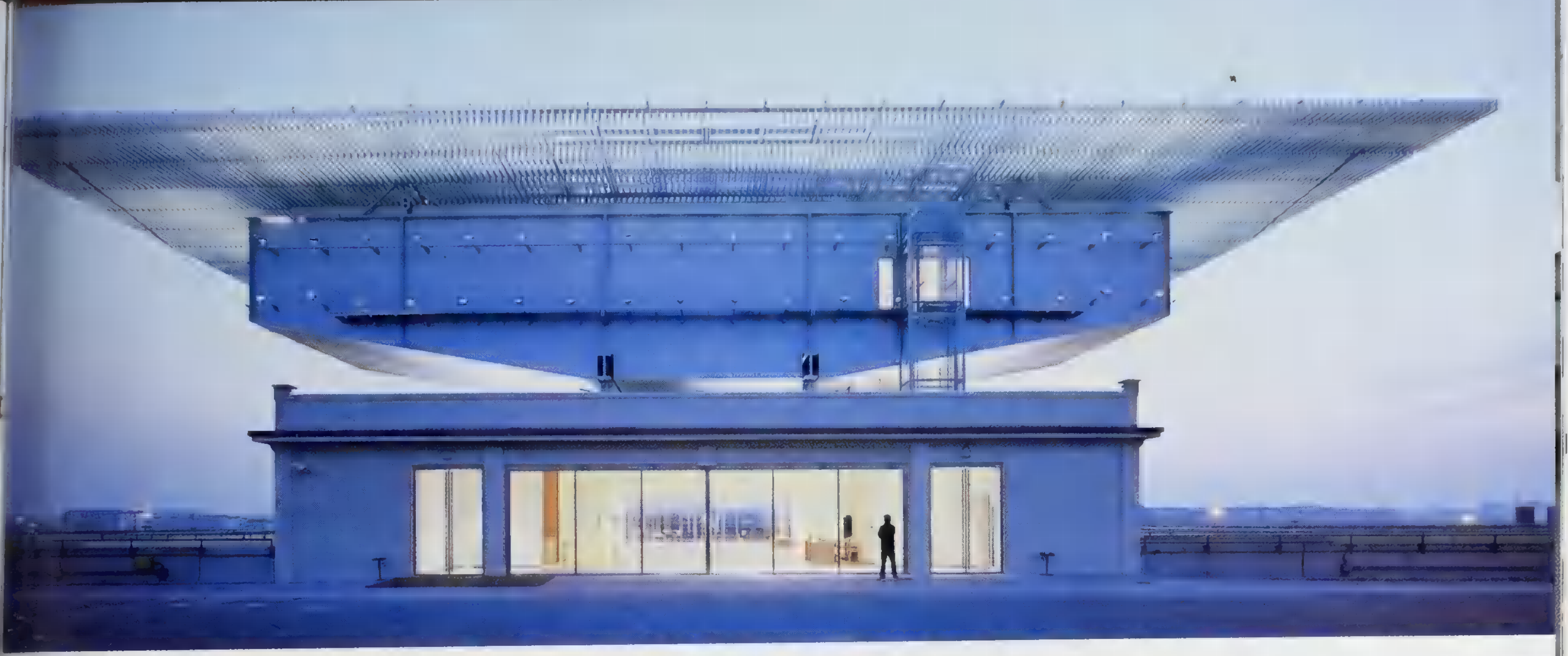


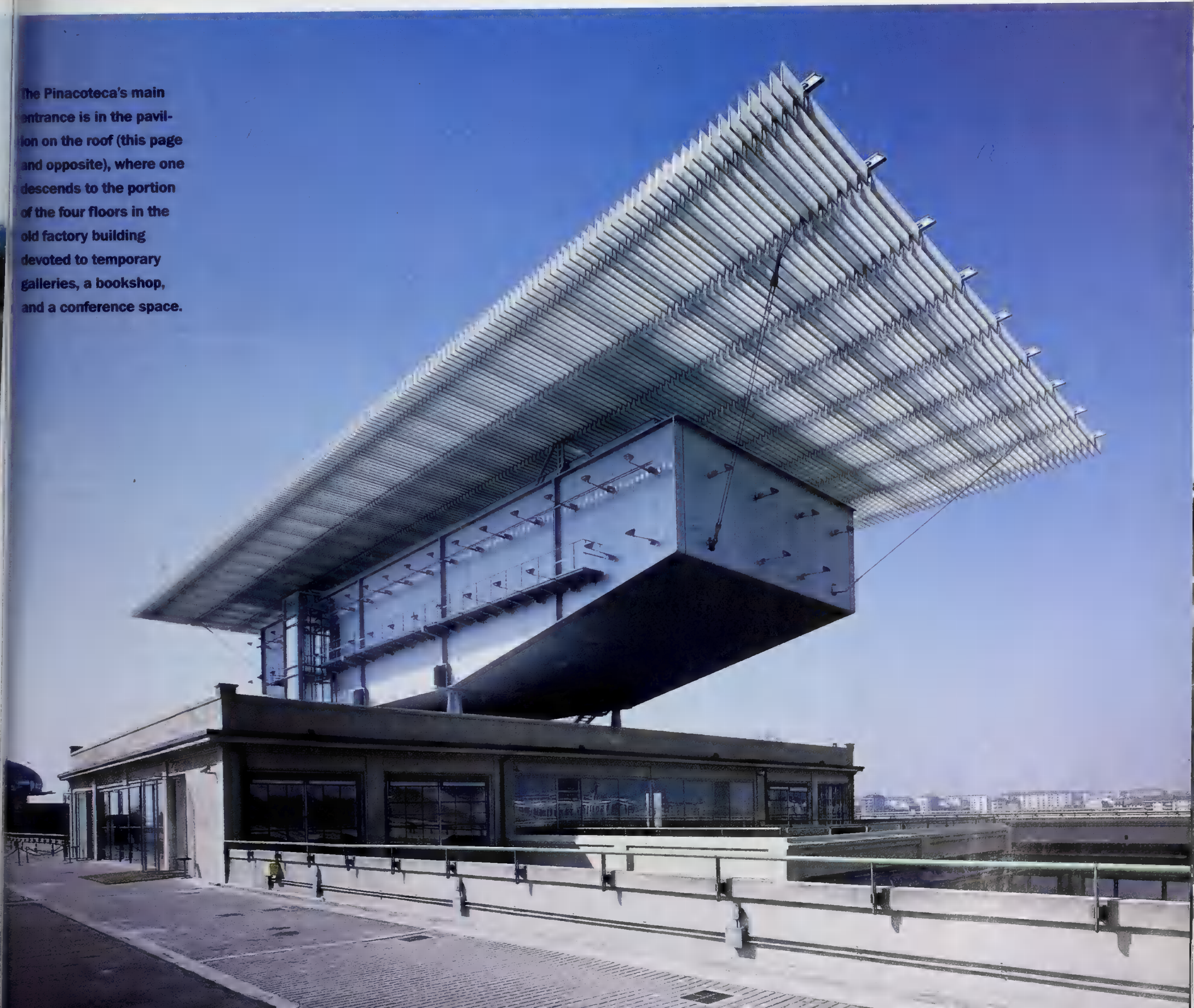
Atop the historic and enormous former Fiat factory at Lingotto in Turin, Italy, the Pinacoteca Giovanni e Marella Agnelli protrudes visibly above the city. Or at least part of it does. A new, 400-ton structure, dubbed "Scrigno," or treasure chest, appears to levitate over Lingotto's rooftop track for testing cars.

Resting on four steel columns, the steel-clad Scrigno appears at once massive and light. But it forms only the tip of the iceberg of the entire Pinacoteca designed by Renzo Piano Building Workshop: The remainder is contained on four floors of one section of the 2-million-square-foot factory under the rooftop track.

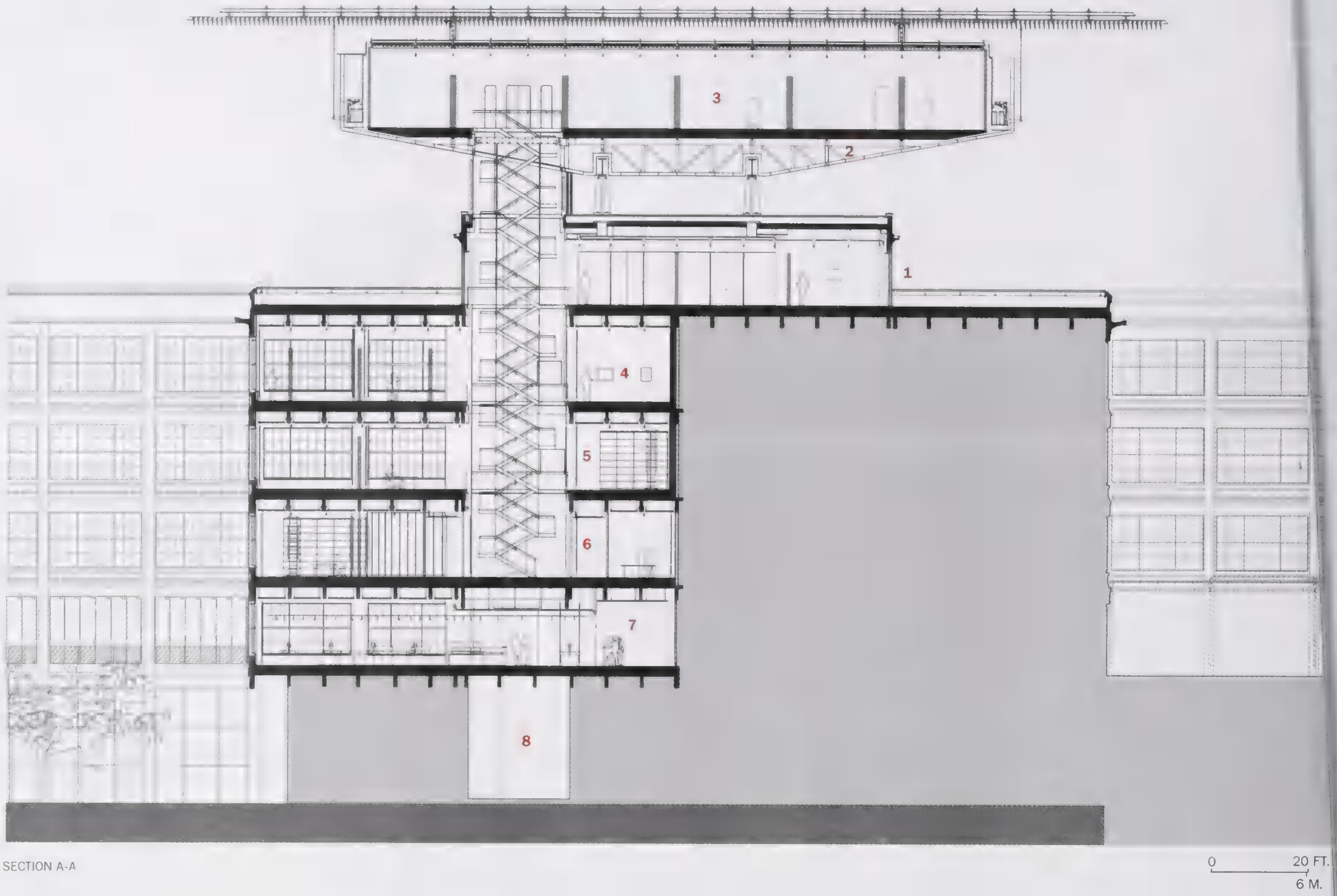
The Pinacoteca constitutes the third phase of Piano's 14-year renovation of the factory, designed by Matté Trucco in 1917, into a mixed-use center with a hotel, shops, and conference space [RECORD, March 1997, page 42]. Since Fiat mogul Gianni Agnelli and his wife, Marella, were donating the permanent collection to the museum, which is run by the Palazzo Grassi of Venice (supported with Fiat money), they were very much involved in the design. Clearly, Piano's previous work at Lingotto gave him an edge as the architect of choice. The Agnellis nevertheless were doubly committed to the architect after a visit to his Beyeler Museum in Basel. Over the next three years, and what Piano has noted were "endless discussions" with the clients, came the forceful, yet elegant result. "Gianni wanted to know

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.





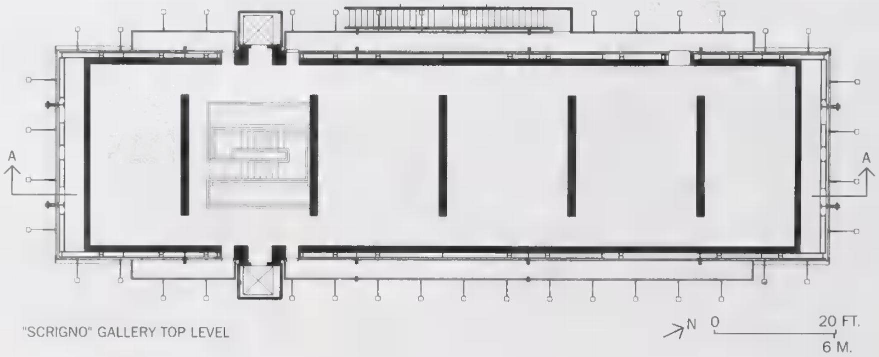
The Pinacoteca's main entrance is in the pavilion on the roof (this page and opposite), where one descends to the portion of the four floors in the old factory building devoted to temporary galleries, a bookshop, and a conference space.



SECTION A-A

1. *Main entrance and temporary exhibition*
2. *Mechanical room*
3. *Scrigno (permanent collection gallery)*
4. *Temporary exhibition*
5. *Educational activities and exhibition*
6. *Offices and meeting rooms*
7. *Museum bookshop*
8. *Receiving area*

Connecting the Scrigno with the entrance pavilion and the galleries underneath a suspended stair (section, above) acts as a display device (opposite). The stair, with open risers and glass balustrades, also allows light and space to flow throughout the galleries.



"SCRIGNO" GALLERY TOP LEVEL

the diameter of every bolt," Piano remarks. "A good client-architect relationship is not really about money. It's about understanding."

Program

The program called for a total of 35,000 square feet, of which 4,300 square feet would be devoted to the exhibition of a permanent collection of 25 artworks formerly owned by the Agnellis, by masters ranging from Tiepolo to Manet, Renoir, Matisse, and Picasso. In addition, the Pinacoteca would provide 12,910 square feet on two floors for changing exhibitions, 5,900 square feet for educational activities, plus 5,900 square feet for meeting rooms, and 3,600 square feet for a bookshop.

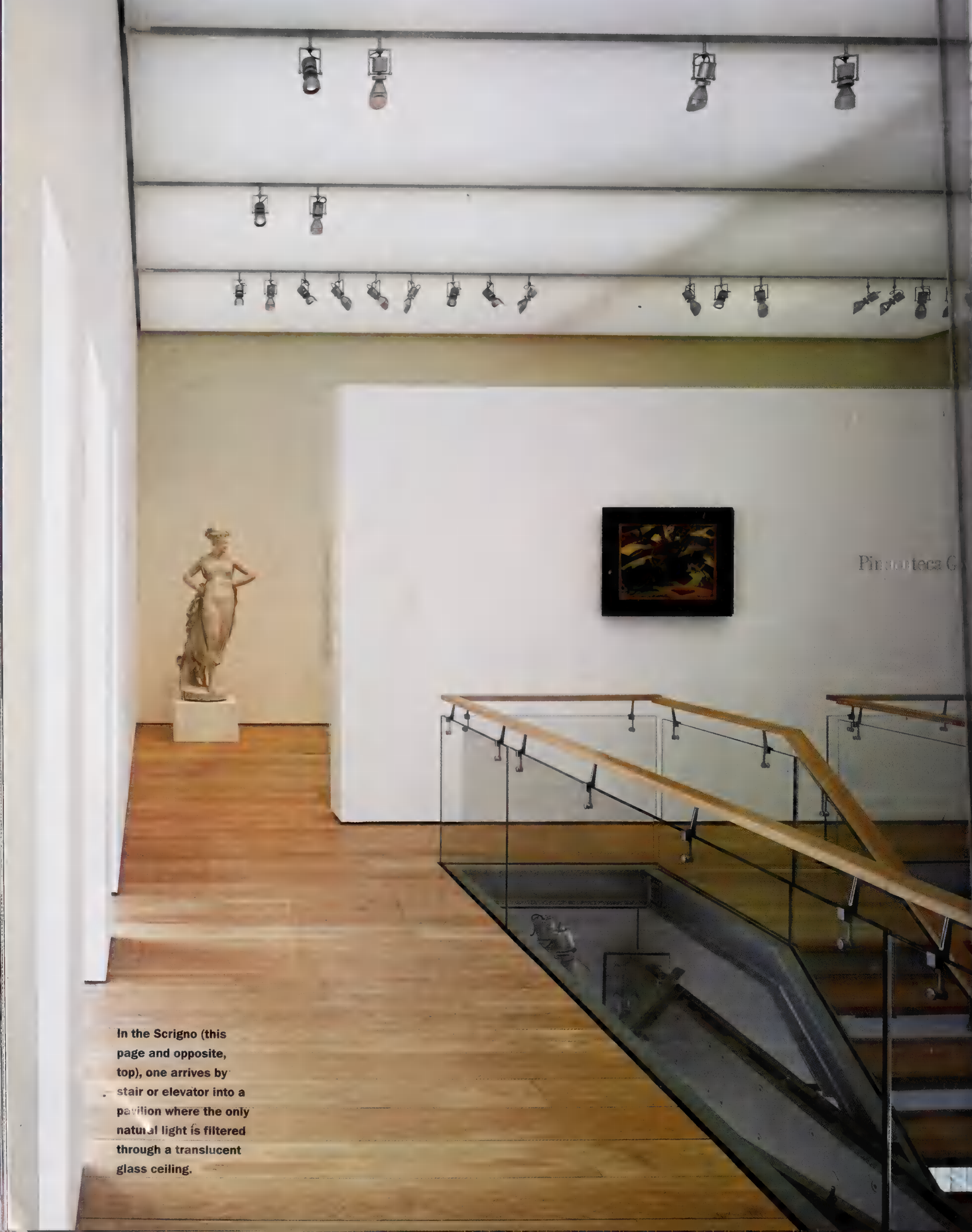
Solution

Upon arriving at the Lingotto, visitors first encounter a lively shopping and restaurant area. Then, turning into a corridor leading to the Pinacoteca, the atmosphere becomes quieter and more serene. A dedicated elevator takes visitors up to the main entrance on the rooftop test track, where it is possible to walk around the exterior of the Scrigno and to admire the "Bolla," a spherical glass conference center designed by Piano in 1994.

By separating the permanent collection from the rest of the Pinacoteca, Piano and his team, headed by Maurits van der Staay, were able to give the permanent collection a unique identity. The Scrigno, which is the permanent gallery, looks almost like an abstracted bird of steel perched on four legs atop the roof. Enclosed by a half-inch-thick steel-sheet skin, the Scrigno is topped by a cantilevered roof that seems to float over the space.

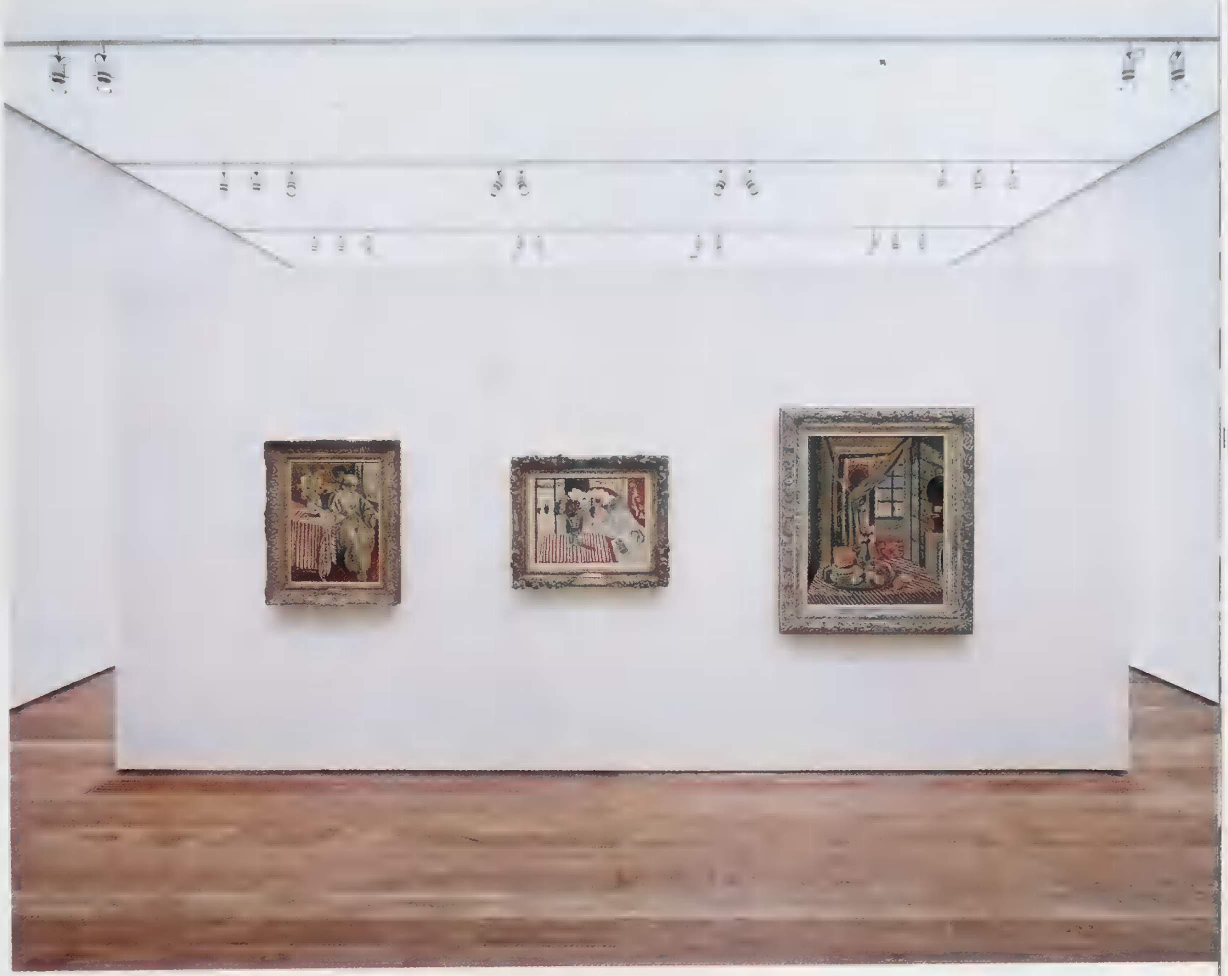
The roof, nicknamed the "flying carpet," is composed of four layers of steel profiles under which are 1,600 glass fins. This canopy is attached by steel struts to the walls of the gallery and sits about 4 feet above the gallery's own translucent roof.

In the lower roof, glass sits atop layers of movable aluminum slats, 10-foot-long white neon



In the Scrigno (this page and opposite, top), one arrives by stair or elevator into a pavilion where the only natural light is filtered through a translucent glass ceiling.

The paintings in the Scrigno (right), mounted on freestanding partitions, seem to float between the solid plane of the oak flooring and the translucent ceiling. In the temporary galleries (bottom), daylight is admitted through existing windows.



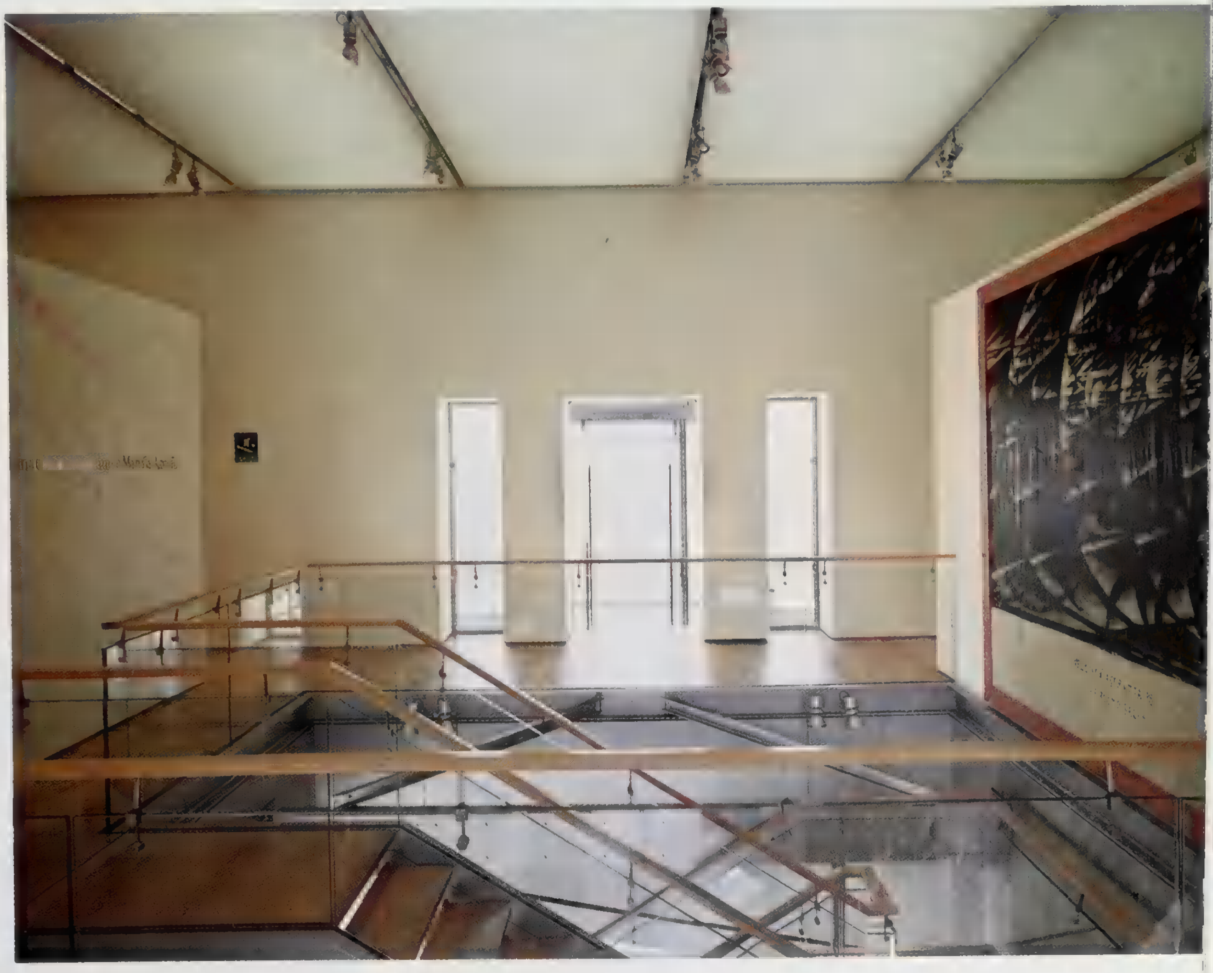
tubes, and, finally, a vellum sunscreen made of "Trevira," a synthetic fiber tissue. Additional spotlighting reinforces the mix of artificial light and daylight, so that the paintings and statues are bathed in a luminous glow. The 20-foot-high gallery, divided by 9-foot-high freestanding partitions, is sparely designed with off-white gypsum-board walls and oak floors, and stainless-steel details.

Below, in the reinforced-concrete structure of the factory, a suspended stair of painted steel, wood, and glass links the temporary galleries and other spaces. In these galleries there is no natural top lighting: Daylight is admitted through existing windows and supplemented by spotlighting.

Commentary

A great serenity characterizes the spaces of the Scrigno. And with 25 artworks (two of which are sculptures), one feels no overwhelming need to rush through the space. The evanescent light that filters down from the roof augments the sense of contemplation in this impeccably detailed, Minimalist environment.

Downstairs, the temporary galleries are not as striking, due to the lack of top lighting. But the ample dimensions provide flexible spaces for the changing exhibitions that will be organized by the Palazzo Grassi. And even if the Scrigno is more radiant than the rest, all the spaces of the Pinacoteca represent accomplished additions to Piano's impressive museum oeuvre. ■



PHOTOGRAPHY: © MICHEL DEN

Urbis

Manchester, England

2

IAN SIMPSON CREATES A MONUMENTAL SHAPE FOR A SMALL GLASS MUSEUM WHERE THE URBAN SURROUNDINGS BECOME PART OF THE EXHIBITION.

By Hugh Pearman

Architect: *Ian Simpson Architects, Manchester and London—Ian Simpson, principal*
Client: *Manchester City Council*
Consultants: *Martin Stockley Associates (structural engineer); Farley Consulting (mechanical, electrical, and acoustical engineer)*

Size: *79,500 square feet*
Cost: *£30 million*
Completion date: *2002*

Sources
Reinforced-concrete structure: *A.M. Griffith*
Steel: *Fairport*
Metal and glass double-skin wall: *Seele*
Roof tile: *Varla*
Roof glazing: *Vitral*

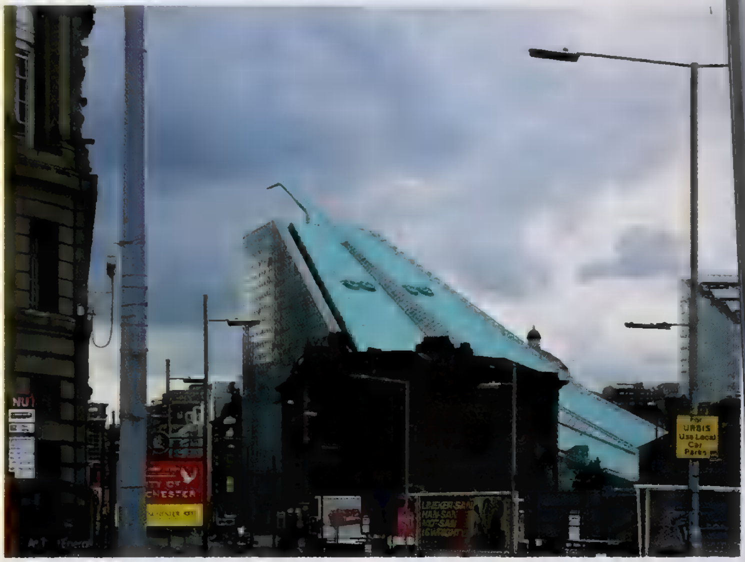
www For more information about the people and products involved in this project, go to Building Types Study at ***architecturalrecord.com***.

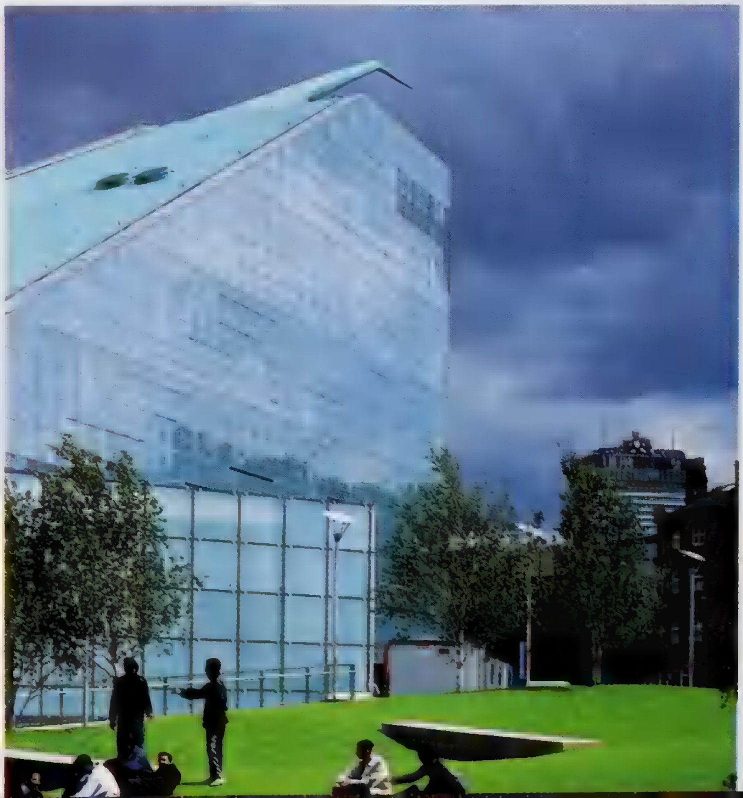
Manchester, which regards itself with some justification as the second city of England, has a proud record when it comes to cultural regeneration. The city, which was once one of the world's great manufacturing powerhouses, has adapted better than most to the postindustrial age. Three recent projects—Daniel Libeskind's Imperial War Museum [RECORD, October 2002, page 125], Sir Michael Hopkins's extension to the city's 19th-century art gallery, and Ian Simpson's Urbis—give the flavor. In this triumvirate of very different but similarly sized projects (each cost around £30 million), Urbis is by far the strangest.

Strange not only because of its hermetic architecture—this is a taut-skinned glass object that looks like nothing so much as a conning tower of a huge submarine surfacing in the urban core—but because of its content, or lack of it.

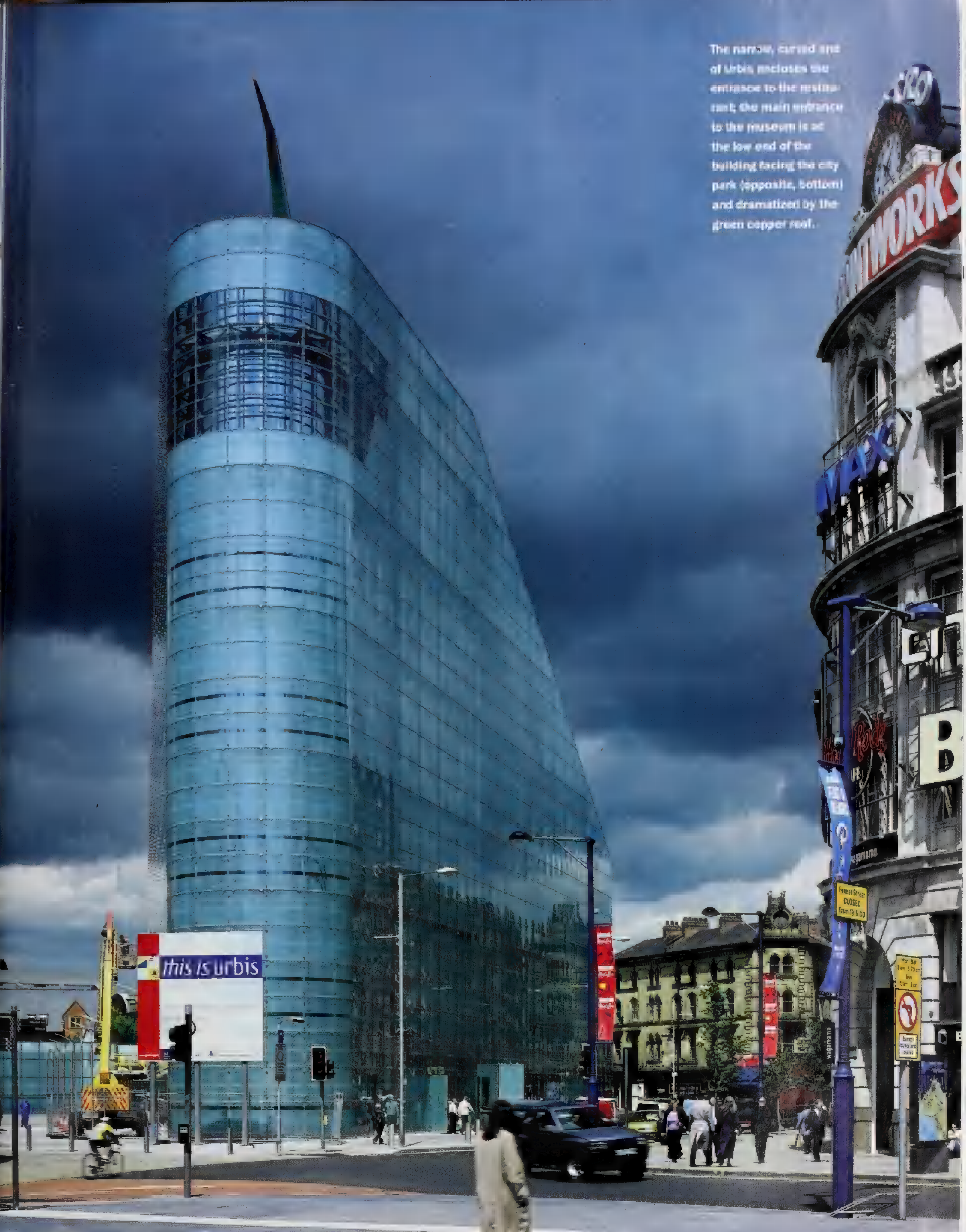
Program

Urbis was not built in response to any overwhelming need for it, but rather to act as a symbol of rebirth after an I.R.A. terrorist bomb devastated Manchester's urban center in 1996. Ian Simpson, one of a squad of excellent younger architects who emerged in the city in the 1990s, played a key role in the urbanistic elements of the reconstruction, which has an overall value of at least £500 million. In terms of the program, Urbis was to be an interac-



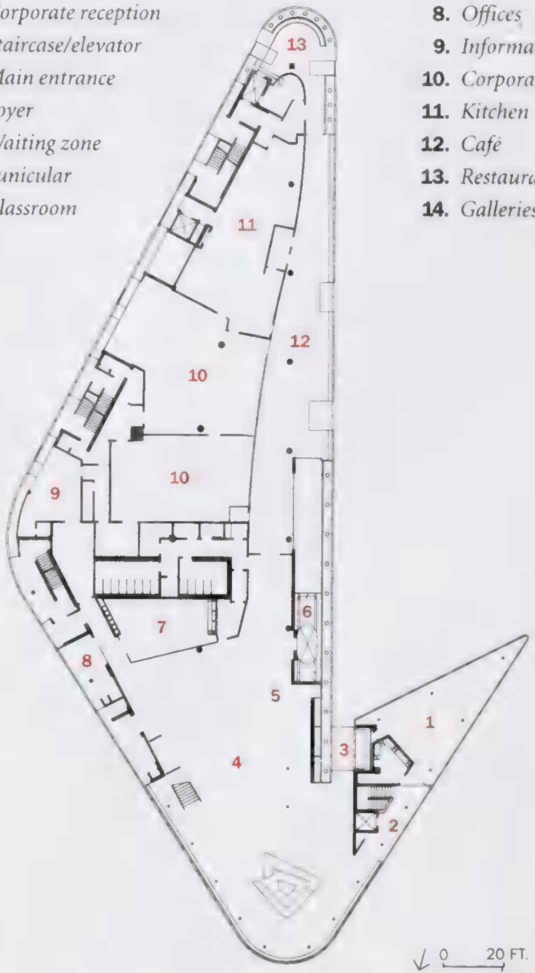


VIEW (THIS PAGE AND OPPOSITE)

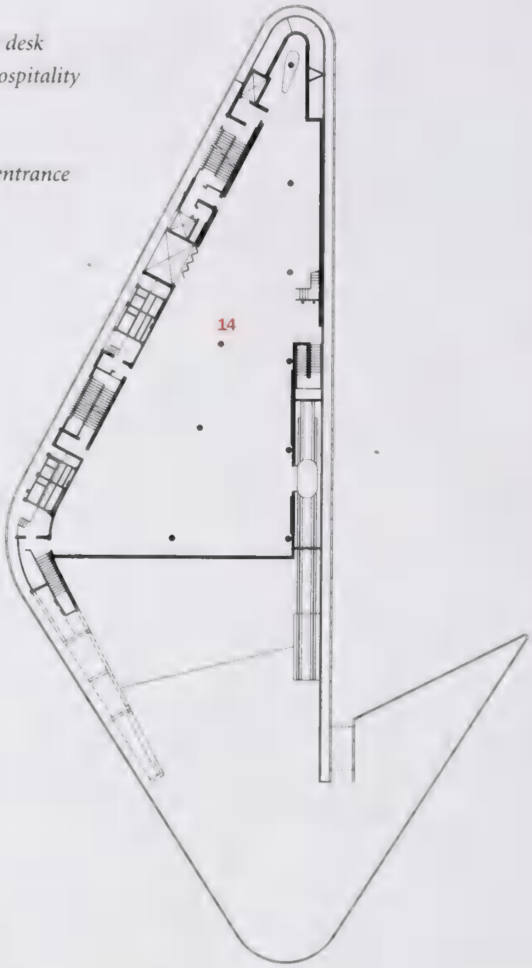


The narrow, curved end of Urbis encloses the entrance to the restaurant; the main entrance to the museum is at the low end of the building facing the city park (opposite, bottom) and dramatized by the green copper roof.

1. *Corporate reception*
2. *Staircase/elevator*
3. *Main entrance*
4. *Foyer*
5. *Waiting zone*
6. *Funicular*
7. *Classroom*
8. *Offices*
9. *Information desk*
10. *Corporate hospitality*
11. *Kitchen*
12. *Café*
13. *Restaurant entrance*
14. *Galleries*



GROUND FLOOR



LEVEL 2

tive museum devoted to the city and urbanism. In the words of Simpson, it is "not a museum so much as a series of experiences different cities around the world."

Solution

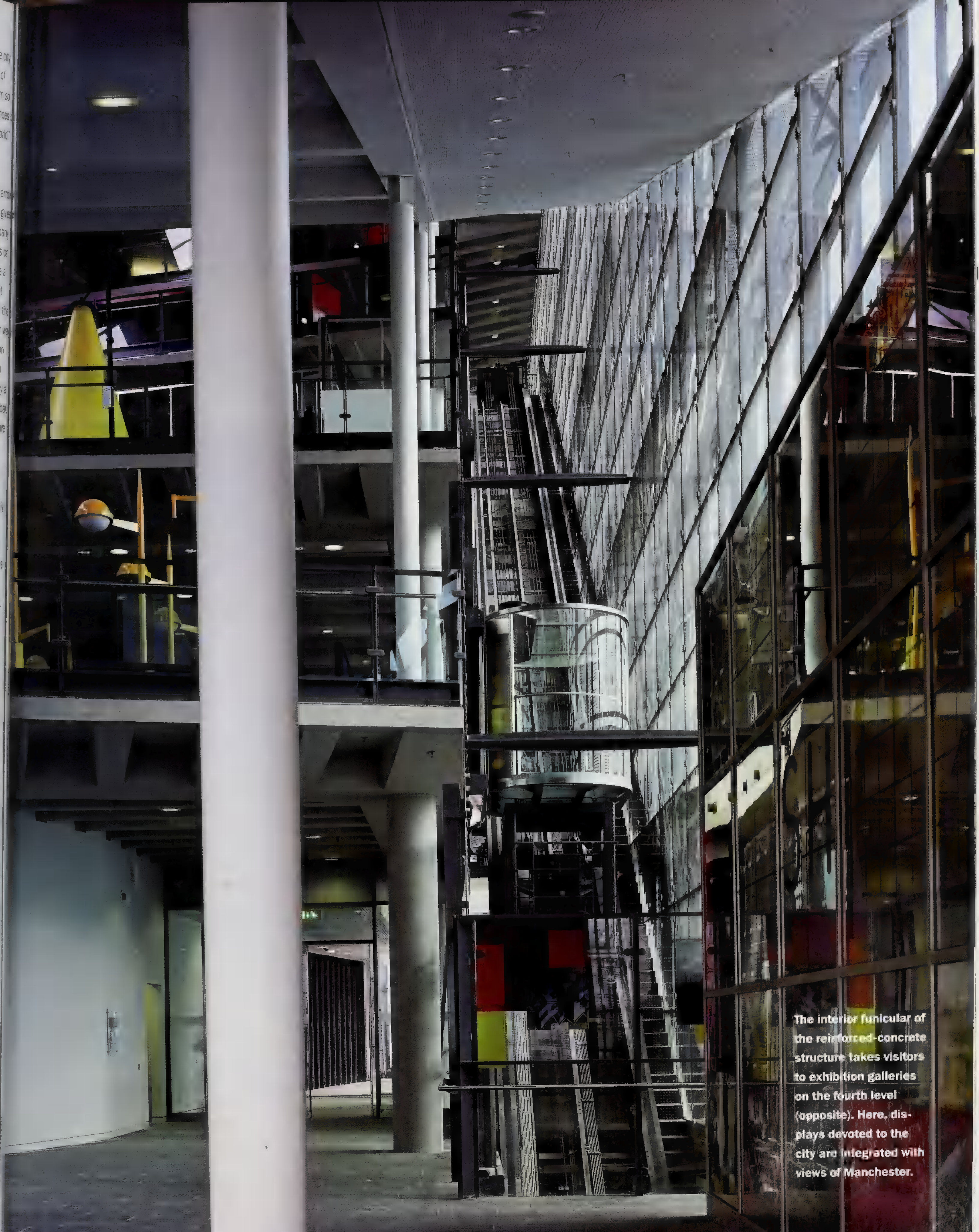
Only six stories high, Urbis's narro banding of double glass walls give it a heroic scale, suggesting many more floors. The building works o the cascade principle: You take a scenic funicular-railway car that rises up through the building to th fourth level, and then work your wa back down through the exhibition levels, by stair or lift. But the top two floors, which are occupied by a reservation-only restaurant and ba and which have the best views, are inaccessible to normal visitors.

Commentary

As the glossy prow of an effectively triangular plan at an important urban intersection, this reworking of New York's Flatiron building plays its role with aplomb, even with a meaningless cranked prong on top. Because it rises from a low base, the angled roof is clearly visible. This is well handled, with a central spine of glazing surrounded by prepatinated copper tiles. Inside, the succession of four open floor decks spiraling up the building succeed in creating spatial dynamism.

The content of Urbis itself, however, leaves one unsatisfied. The general impression is that exhibition designers have struggled to fill the gallery spaces. Exhibitions about law and order or featuring video games about the city of the imagination seem condescending and baffling in equal measure.

This interior display is not the fault of Simpson, an accomplished architect with offices in Manchester and London, who has done his best in the absence of a clearly defined program. He has made a handsome container, generated by the exigencies of the site. But Urbis struggles to express its identity. It is a good, if eccentric, building in search of a real purpose. It needs content to match up to the promise of the gift-wrapped structure. ■



The interior funicular of the reinforced-concrete structure takes visitors to exhibition galleries on the fourth level (opposite). Here, displays devoted to the city are integrated with views of Manchester.

Naismith Memorial Basketball Hall of Fame

Springfield, Massachusetts

3

GWATHMEY SIEGEL ASSOCIATES ARCHITECTS USED STRONG, YET SIMPLE FORMS TO SYMBOLIZE THE ACTION-PACKED ENERGY OF THE GAME.

By Charles Linn, FAIA

Design architect: *Gwathmey Siegel Associates Architects—Robert Siegel, FAIA, Charles Gwathmey, FAIA, principals; Nancy Clayton, senior associate; Barry Yanku, project architect*
Architect of record: *Bargmann Hendrie + Archetype—Joel Bargmann, AIA, principal; Thomas Scarlata, AIA, associate principal; Robert Del Savio, senior associate*
Client: *City of Springfield, Massachusetts; Springfield Riverfront Development Corporation*
Consultants: *Scenic Technology, Hottop Associates (exhibit designers); Weidlinger Associates (structural); AHA Consulting Engineers (mechanical/electrical); Mather/Jorgensen (lighting); Acoustic Dimensions (acoustics); VBH - Vanesse Hagen Brustlin (civil); Bovis Lend Lease, O'Connell Development Group (project managers)*
General contractor: *Peabody Construction*
Size: *280,000 square feet*
Cost: *$35,500,000 (building); $11,500,000 (exhibits)*
Sources
Dome cladding: *VerCeram*
Exterior cladding: *STO; Alply*
Metal ceilings: *Ceilings Plus*
Acoustical ceilings: *Armstrong*
Programmable dome lights: *Color Kinetics*

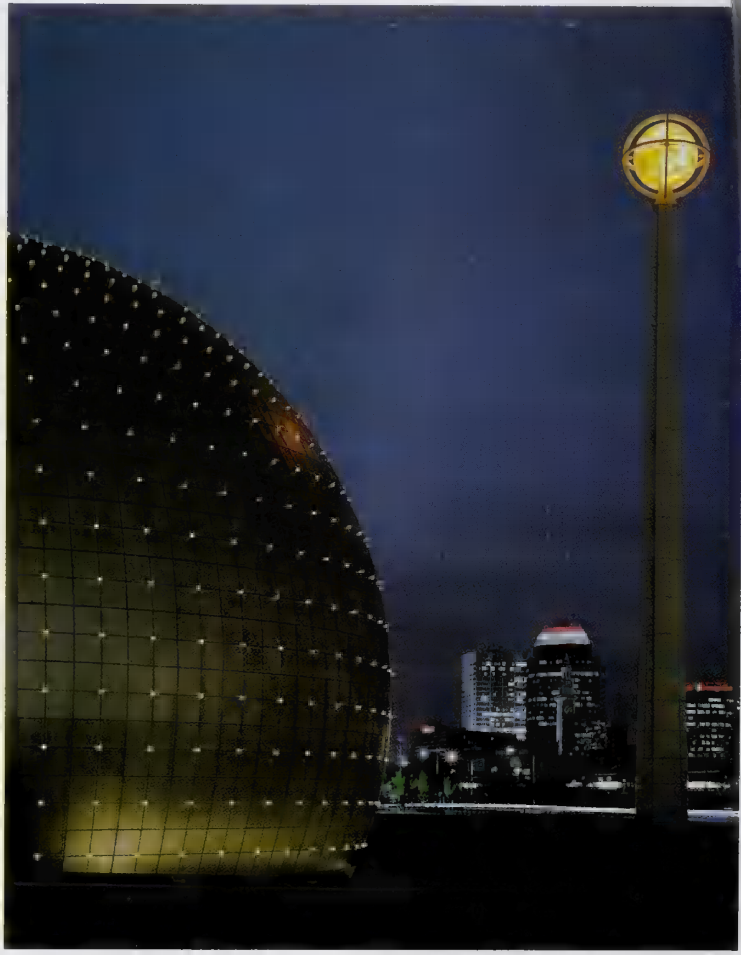
WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com.**

For its design for the new home of the Basketball Hall of Fame, dedicated to the game's inventor, James Naismith, Gwathmey Siegel Associates relied on forms that anyone who has ever watched the game can understand: a hemisphere and, nearby, a spire surmounted by a great illuminated basketball. A wink and a nod to the famed Trylon and Perisphere of the 1939 World's Fair? Not at all, says Robert Siegel, FAIA, but very much in keeping with the firm's tradition of using straightforward geometry.

Program

The Basketball Hall of Fame's public-private client structure is complex. Representatives of the City of Springfield and the Commonwealth of Massachusetts intended for the building to be a catalyst for urban revitalization and riverfront development. After investing more than $80 million in the project, these agencies wanted to ensure that the museum would become a destination for large numbers of tourists, attract important retailers to the large areas dedicated to stores, and generate profits enough to pay off bonds issued to cover construction costs.

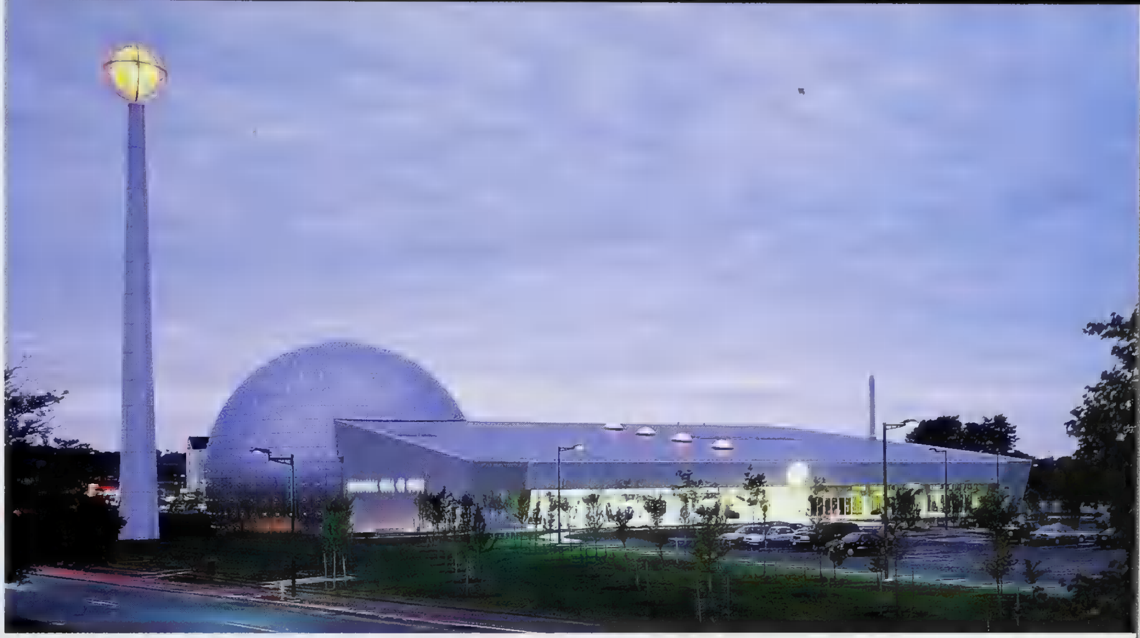
The hall's board of trustees comprised athletes; sports broadcasters; and representatives from professional, collegiate, and amateur basketball organizations. They would all be involved in the museum's campaign for private donations and

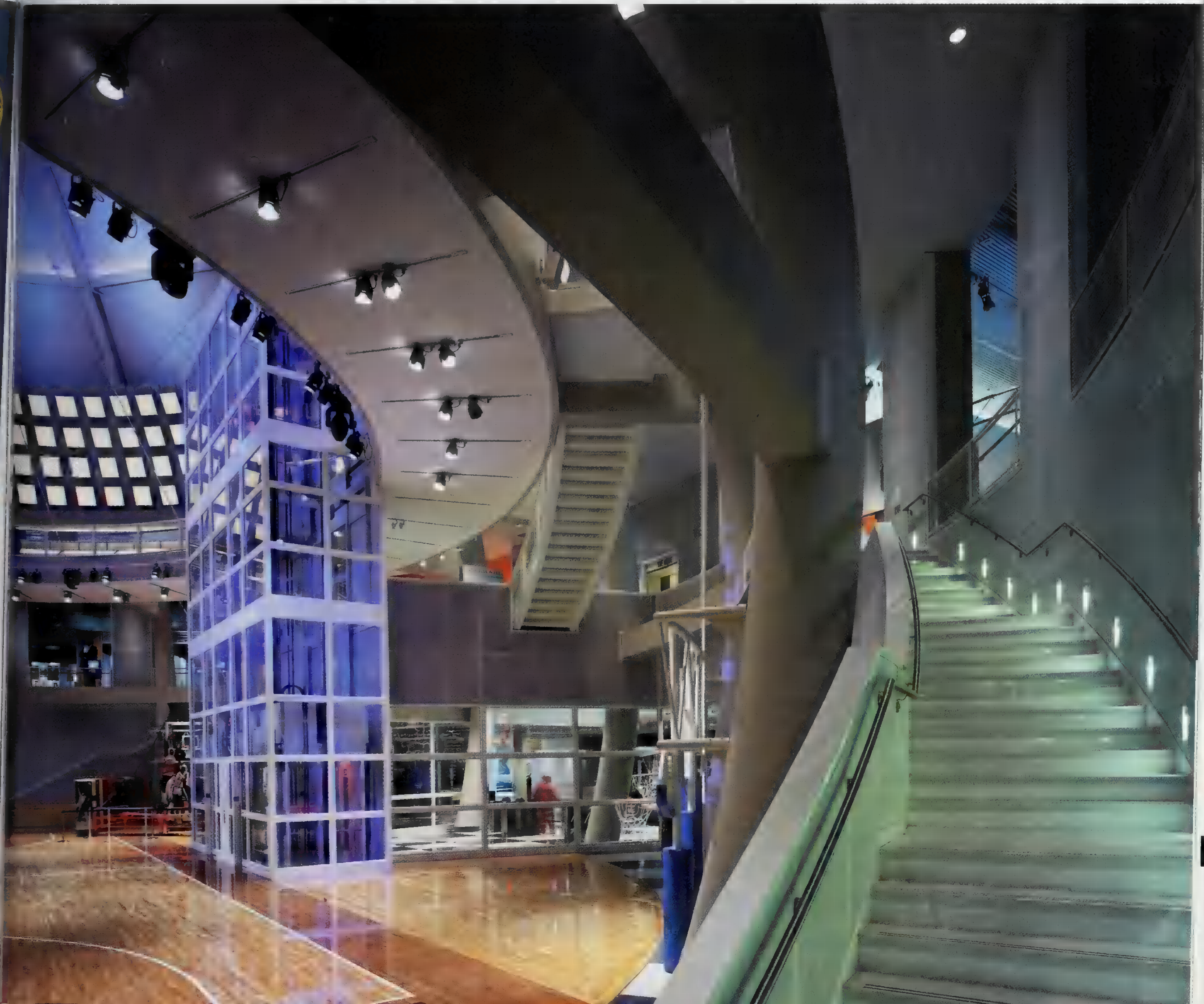


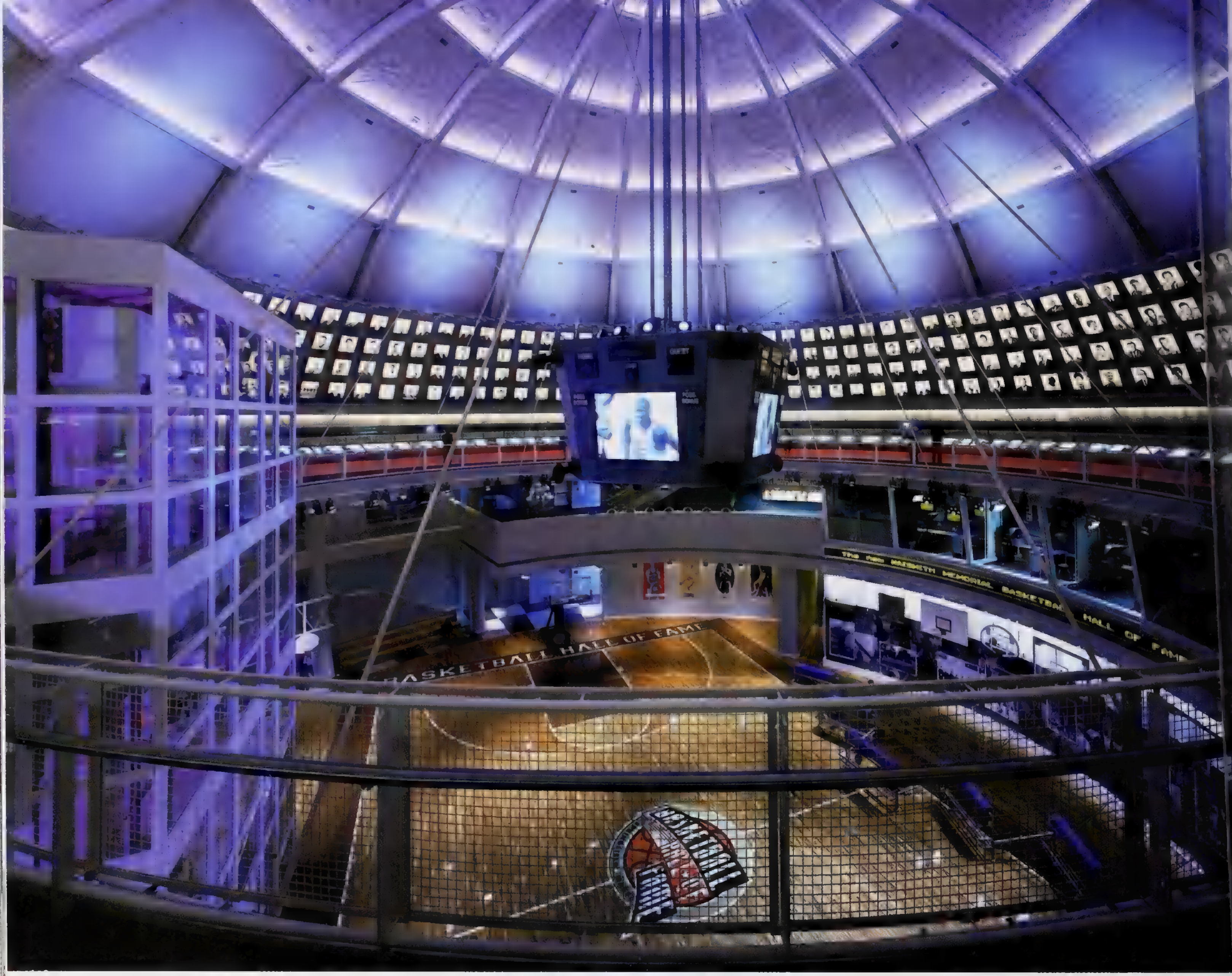
tapped as sources for the ongoing supply of new exhibition materials needed to keep people coming back. These sponsors were concerned about how the story of the game would be told and how its players would be represented. All of the groups understood that the facility needed to have a recognizable image that would appeal to people who might need to be convinced that a "museum" can be an entertaining place to visit.

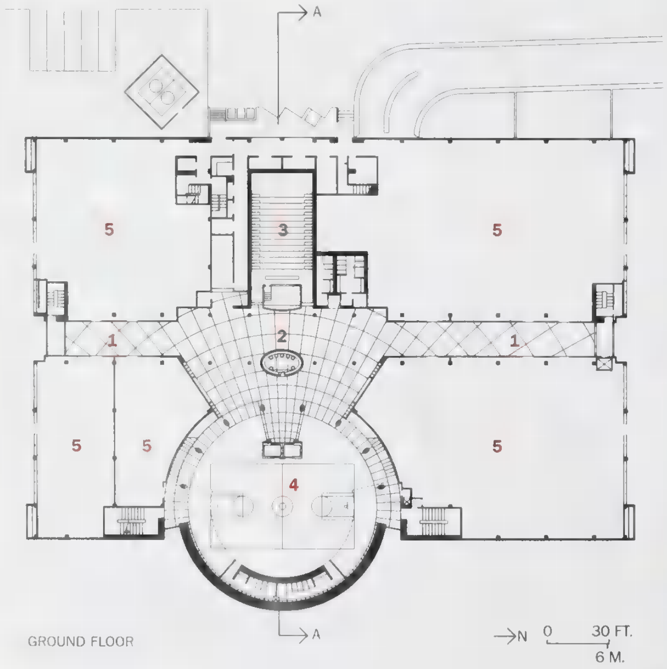
Solution

The building's forms are almost self-explanatory. The hemisphere-shaped dome houses exhibits and a full-size basketball court. It is constructed of rolled steel sections and covered by rong geometries ow the building to be stantly identified pposite and this page, p), whether it is being served from nearby 91 or on television reens. An elevator elow) whisks visitors the museum's third vel, the Honors Ring ext page, top). From ere, they descend rough second-floor xhibits and finally to e Center Court on the round floor.



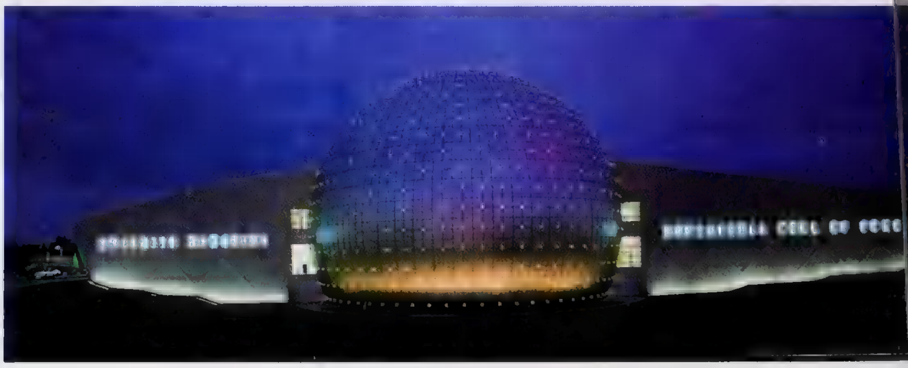






1. *Retail concourse*
2. *Lobby and ticketing*
3. *Screening room*
4. *Basketball court*
5. *Retail/food service*

An abundance of balconies and open staircases (above and opposite) help visitors avoid the feeling of being lost in the kind of dark, disorienting spaces typical of many museums.



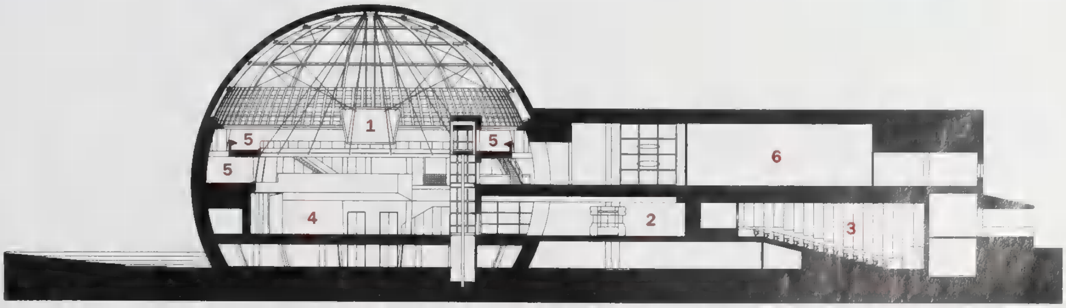
ceramic-based composite panels that have a semispecular finish. The building's retail spaces, main corridor, ticketing booth, and large screening room are covered by a gently curved roof, characterized by Siegel as a "swoop." He notes, "We looked for forms that would be readily appreciated by all ages. The clients wanted it to appeal to everyone, not just people who were educated in architecture. The building had to be able to stand up as a brand, so whether it was being seen at high speed from Amtrak or Interstate 91 [which run next to the site], or on television screens across the planet, it would be instantly recognizable."

A major design decision made by the architects and Scenic Technology, the exhibit designers, in collaboration with the museum staff, was to lead museumgoers through the hall sequentially, from the top of the building down. Visitors to the hall are whisked by elevator to the building's third level, the "Honors Ring," where interactive displays teach them about Hall of Fame members. At the second level, exhibits tell the story of basketball. When visitors arrive at the ground floor "Center Court," they can take a few shots at the baskets.

Commentary

The architects have succeeded in giving the building an unmistakable identity. It is well organized and a fun place to visit. Museums that appeal to the devotees of a single area of interest, like this one, face special challenges in attracting repeat visitors. With such a strongly iconic building as a foundation, the museum's success now depends upon the ingenuity of its curators. ■

1. *Scoreboard*
2. *Lobby and ticketing*
3. *Screening room*
4. *Basketball court*
5. *Exhibits*
6. *Administration*



SECTION

Minnetonka Center for the Arts

Wayzata, Minnesota

4

JAMES DAYTON EMBRACES AN INDUSTRIAL AESTHETIC WITH A PLAYFUL COLLAGE OF FORMS FOR HIS FIRST CULTURAL PROJECT.

By John E. Czarnecki, Assoc. AIA

Architect: *James Dayton Design—James Dayton, AIA, principal and project designer; Patrick Regan, Assoc. AIA, project manager; Jim Larson, AIA, Scott Elofson, Marcy Conrad Nutt, Tatsu Tanaka, Nicole Triden, Sarah Hansen, Andrew Kluess, Adam Back, design team*

Client: *Minnetonka Center for the Arts*

Consultants: *Meyer, Borgman, Johnson (structural engineers)—Mike Ramerth, project principal, and Gregg Curtis, project engineer; Oslund & Associates (landscape architects)—Tom Oslund, FASLA, project principal, and Joe Favor, project manager*

General contractor: *M.A. Mortenson Company*

Size: *31,433 square feet*

Cost: *$5.8 million*

Completion date: *June 2002*

Sources

Structural steel: *Mannstedt + Sons (fabrication); Western Steel Erection*

Wood: *Finland Color Plywood*

Metal/glass curtain wall: *CMI Architectural Products*

Masonry and concrete: *Stellar Concrete*

Glass: *PPG*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

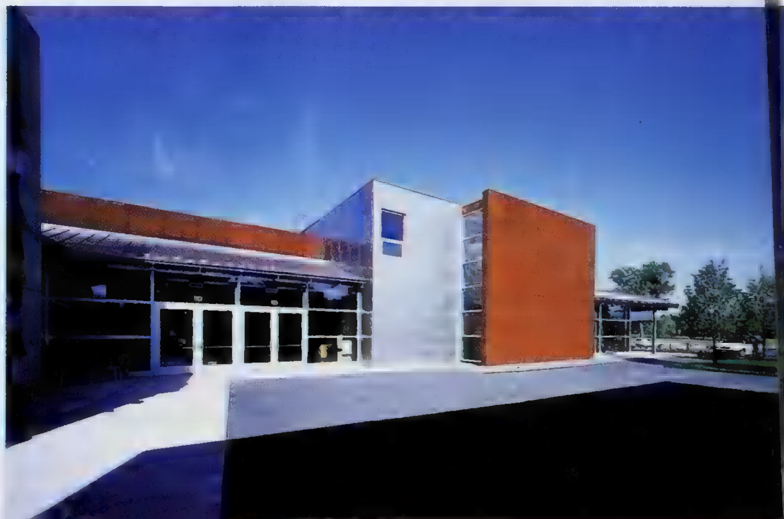
Part gallery, part studio, and part gathering place for the community, the Minnetonka Center for the Arts (MCA) is not a staid museum, but it has a clear focus: the process of art. An amalgam of playful forms in Wayzata, Minnesota, a western suburb of Minneapolis, the building calls attention to its creative intent.

"From the moment you drive by, we wanted it to be about art," says Minneapolis architect James Dayton. A Minnesota native, Dayton (see Dayton profile in archrecord2, page 57) started his firm in the late 1990s when he received this commission—his first on his own—after working for Frank Gehry for five years (see story on Gehry's Winton Guest House in Wayzata, page 30).

Program

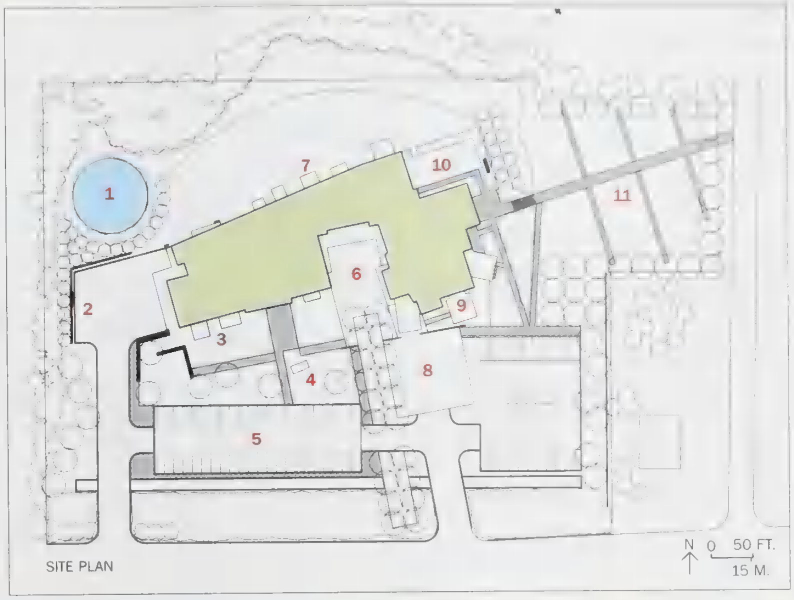
The MCA, which celebrated its 50th anniversary in 2002, is a nonprofit organization providing affordable courses in the visual arts and crafts, with an annual enrollment of more than 5,000 people ranging from children to senior citizens. For more than 30 years, the MCA was located in what had been an elementary school, and the former gymnasium was the art gallery. After initially considering a $3.9 million renovation of the school, the MCA thought wiser and hired Dayton for a new building, 30 percent larger than the old one, at $5.8 million.

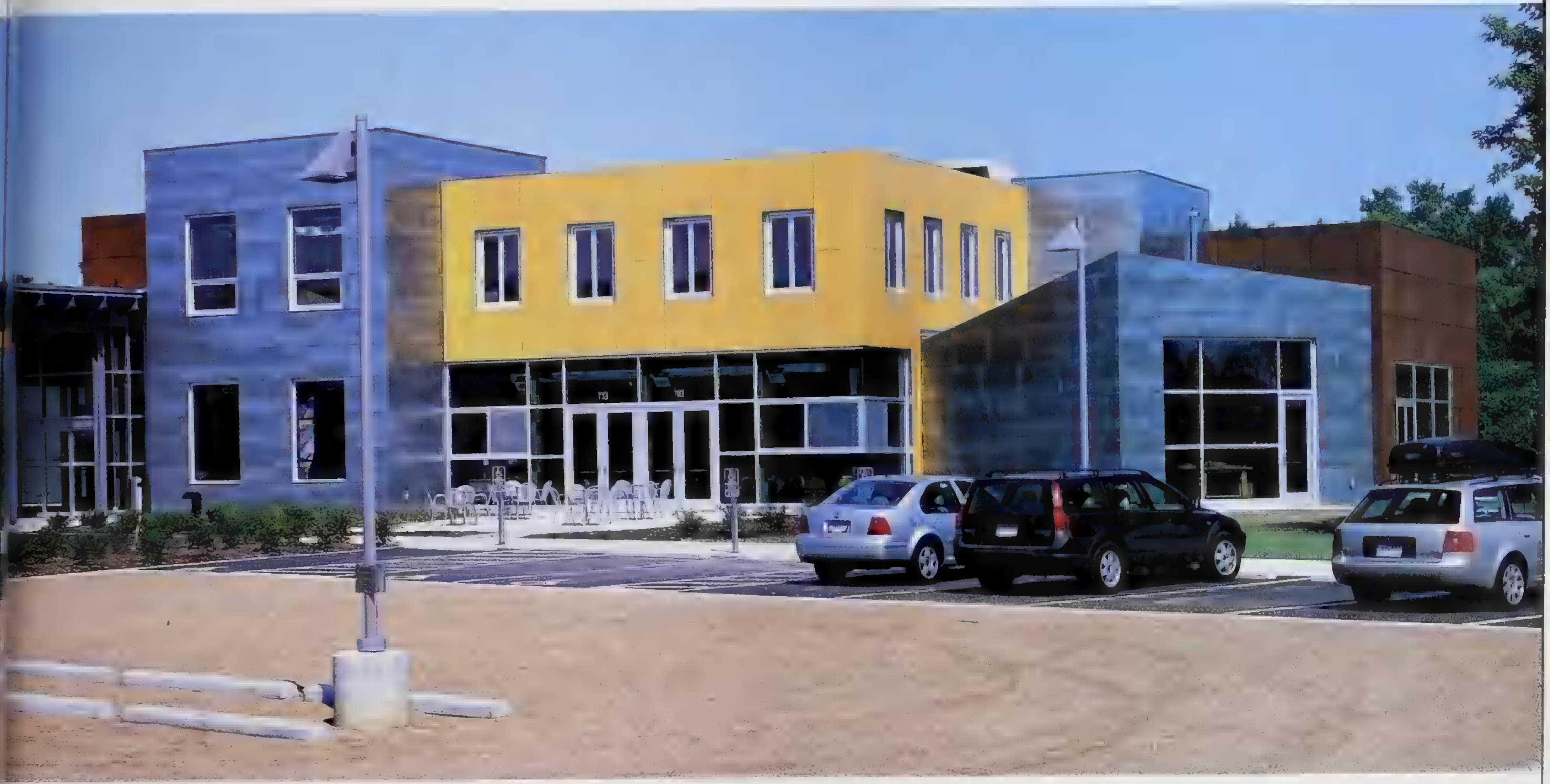
Spaces in the new MCA are clearly differentiated between public

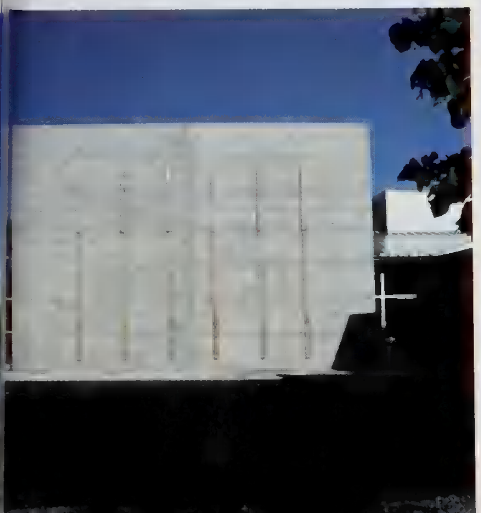


Facing a crushed-gravel parking lot (below), the arts center's many forms are sheathed in Cor-Ten steel, flat galvanized steel, corrugated-galvanized siding, and Parklex. A concrete wall (bottom left) can receive art installations.

1. *Pond*
2. *Art wall*
3. *Ceramics and sculpture courtyards*
4. *Wood kiln*
5. *Parking*
6. *Main courtyard with art wall*
7. *Painting and drawing courtyards*
8. *Entry courtyard*
9. *Dining terrace*
10. *Outdoor classroom*
11. *Sculpture garden*

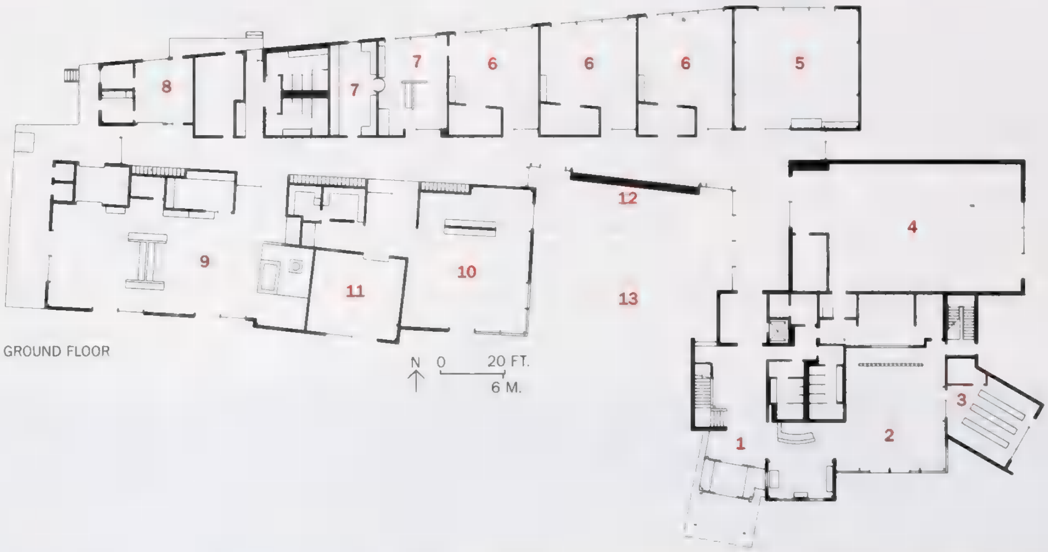




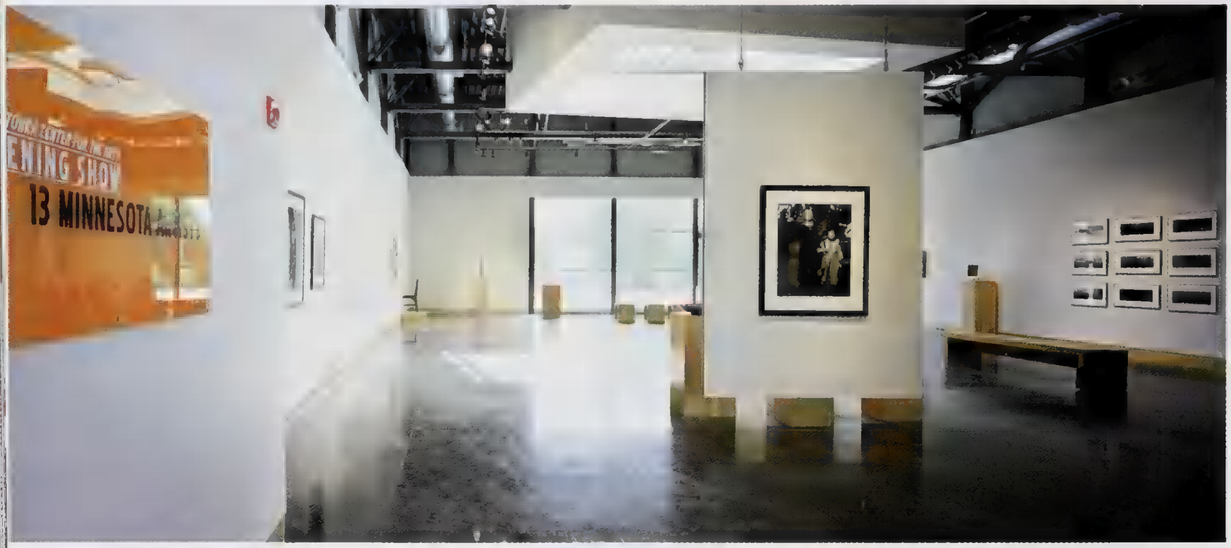


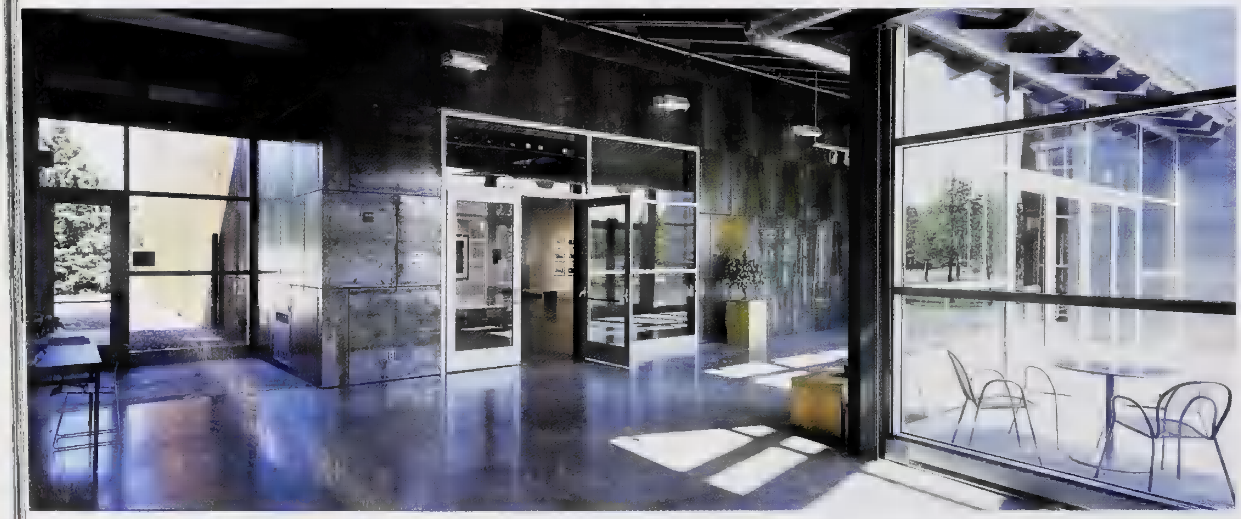
The gallery (pictured below) has movable partitions that are hung from steel beams. The skylight has a shading device for painting and drawing shows. Cor-Ten steel siding sheaths the gallery cube, both in the corridor (bottom) and outdoors.

1. *Main entry*
2. *Café*
3. *Lecture*
4. *Exhibition*
5. *Painting/drawing*
6. *Multimedia*
7. *Photography*
8. *Wood shop*
9. *Sculpture*
10. *Ceramics*
11. *Kiln room*
12. *Art wall*
13. *Main courtyard*



GROUND FLOOR





uses, studios, and administration The public component includes a 3,000-square-foot exhibition galle a café, and a lecture room, all nea the main entrance. The studios, c prising the bulk of the ground floo are organized along a corridor tha intended as a street through the length of the building. Administrati offices are on the second floor.

Solution

Dayton initially proposed a courtyard scheme, but that plan was inefficient and was discarded. Instead, the architect organized th studios so that each has access to daylight and exterior courtyards. Painting and drawing as well as multimedia studios have large amounts of northern exposure, and ceramics and sculpture studios fac south, with adjacent space for outdoor work. A concrete art wall in front of the building (previous page, bottom left) is intended for outdoor art installations, and the courtyard in front of the wall is lined with rows of Little Leaf lindens. Minneapolis landscape architect Tom Oslund designed the outdoor spaces.

The gallery (left), which opened with an exhibition that Dayton curated of Minnesota artists' work, is topped by a square skylight that can be shaded when necessary.

Dayton smartly embraced a more industrial aesthetic of materials to complete the building for $157 a square foot. On the inside, floors are poured concrete throughout the ground level, and the steel structure is exposed on the ceiling of most spaces. Cor-Ten steel siding sheaths the gallery cube, both in the corridor (bottom left) and outdoors. Dayton designed most of the tables in the building, as well as the reception desk, using birch veneer plywood.

Commentary

The building is a stark contrast for the suburb, and Gehry's influence is apparent. Although the collection of exterior masses makes it appear a bit jumbled, it is an appropriate, fun resolution. The collage of forms nicely reflects the art-in-progress nature of the work within. ■

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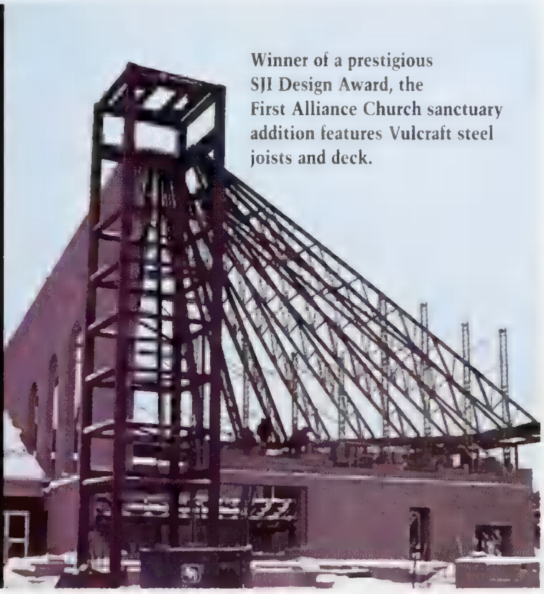

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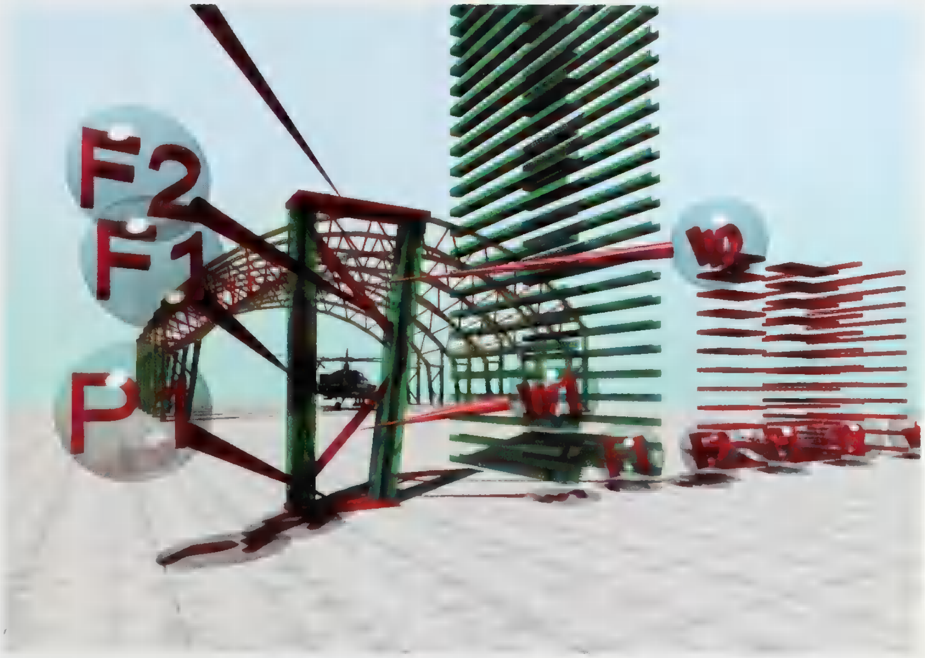
3D Computer Modeling Is Becoming the Tool of Choice for Designing Steel Structures

DESPITE LIABILITY ISSUES, A/E/C TEAMS ARE BENEFITING FROM SHARING THEIR 3D MODELS

By Michael Bordenaro

Architectural computer modeling is not just for Frank Gehry, FAIA, any longer, and he will be the first to tell you. Gehry Technologies has been established in Santa Monica, California, to offer digital products and services in support of the building industry [RECORD, December 2002, page 167]. Gehry Partners has long provided formal training for its building team partners when they needed to incorporate advanced technology applications into their businesses in order to participate in Gehry's projects. Now Gehry Technologies will make this type of education and related technology products available to all building-industry members.

There are other architects, who, like Gehry, have designed their own processes for in-house use. Still others are developing products to assist in creating parametric (intelligent) models, which expand or contract with a click and a drag, while maintaining predetermined proportions and producing new material takeoffs. Finally, many key manufacturers are already equipped to produce building materials based on computer models.



An intelligent structural-steel model of a hangar is viewed through an inventory of members needed to construct it. Created by Webscape, this parametric model's database is preloaded so quick changes generate immediate graphics, design data, and cost analysis.

While the use of 3D computer modeling is still in its infancy, the signs of impending change are clearest in the steel industry, where numerous detailers and fabricators use computer models to manufacture structural members. Many fabricators have highly skilled 3D computer modelers and computer numeric controlled (CNC) machinery [RECORD, November 2002, page 187].

Michael Bordenaro is a freelance writer, based in Chicago, who focuses on architectural technology.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 158 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Discuss what computer modeling can offer to the architectural profession.

2. Explain changes in business procedures that will result from sharing computer models.

3. Describe how structural-steel systems will benefit from computer modeling.

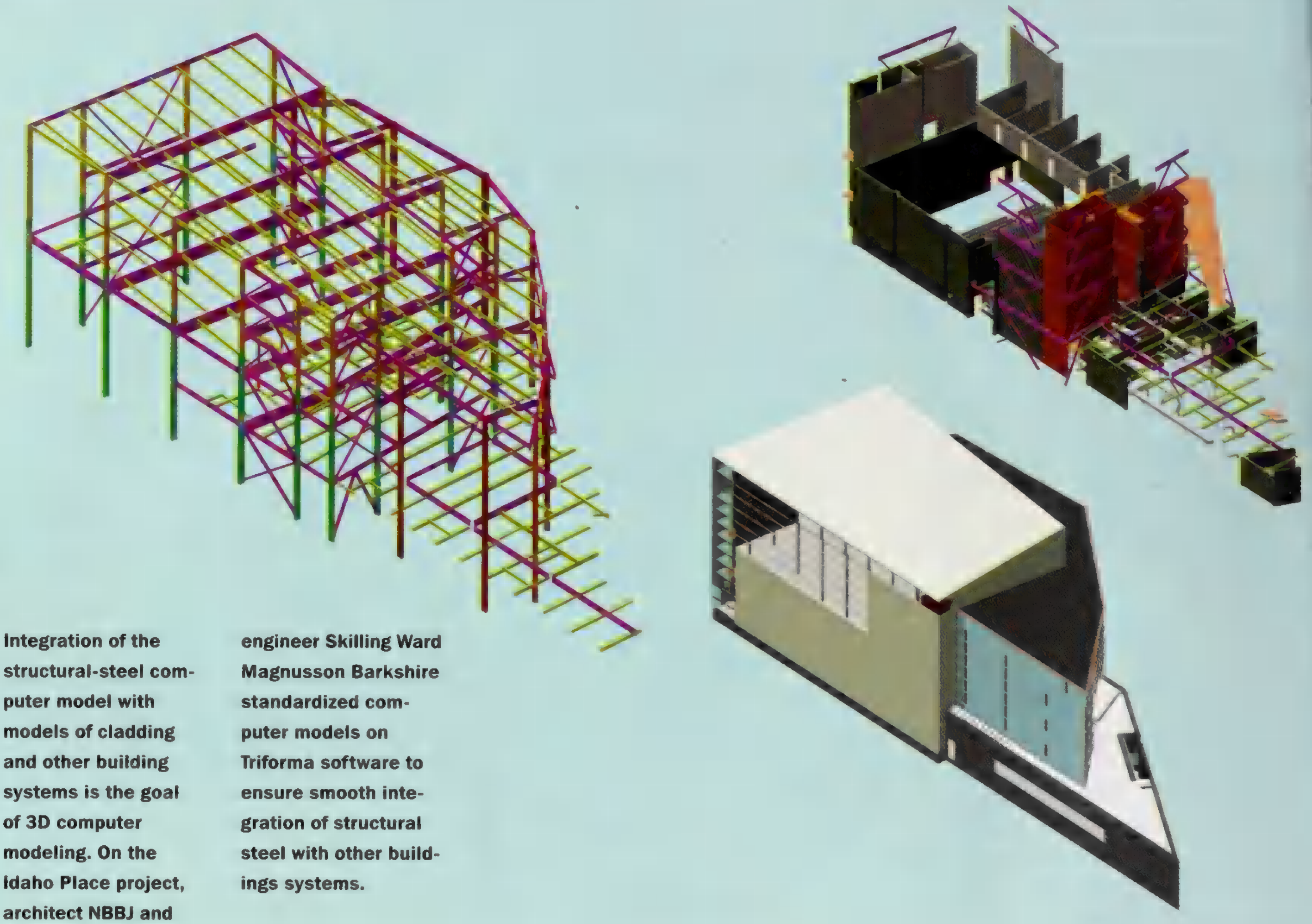
WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to ***architecturalrecord.com***.

Approaches to modeling structural steel

Kimon Onuma, AIA, invented Webscape to help architects build intelligent object models. With offices in South Pasadena, California, and Tokyo, Webscape and Onuma Architects have worked together creating parametric computer models of building types such as aircraft hangars and gymnasiums for use by the U.S. Army Corps of Engineers at various undisclosed overseas locations.

Using a Geometric Description Language (GDL) developed by Graphisoft, Onuma is able to create building models that can be instantly stretched and lengthened on a computer through simple mouse clicks and drags. The models are contained in a 50k to 100k file containing building material databases and complex "if-then" formulas that help determine parameters such as length of trusses, size of members, the number of bolts required, and the amount of paint needed to cover the surface area of the members.

"Working with structural engineers and using structural tables to set up the parametric model, we were able to design a variety of hangars in a meeting with the client and have the structural engineering 90 to 95 percent complete at the end of the meeting," says Onuma. The hanger model also includes information regarding cladding, doors,



Integration of the structural-steel computer model with models of cladding and other building systems is the goal of 3D computer modeling. On the Idaho Place project, architect NBBJ and engineer Skilling Ward Magnusson Barkshire standardized computer models on Triforma software to ensure smooth integration of structural steel with other buildings systems.

windows, and other building systems and materials.

In addition to tracking the structural-member sizes, the model has the capability of graphically displaying all of the individual members for each building iteration created. "The models generate a range of information, including accurate truss lengths, heights, and member size. If there are additional snow or wind loads, the model would increase the size of members according to an extensive set of rules established in the model," he says.

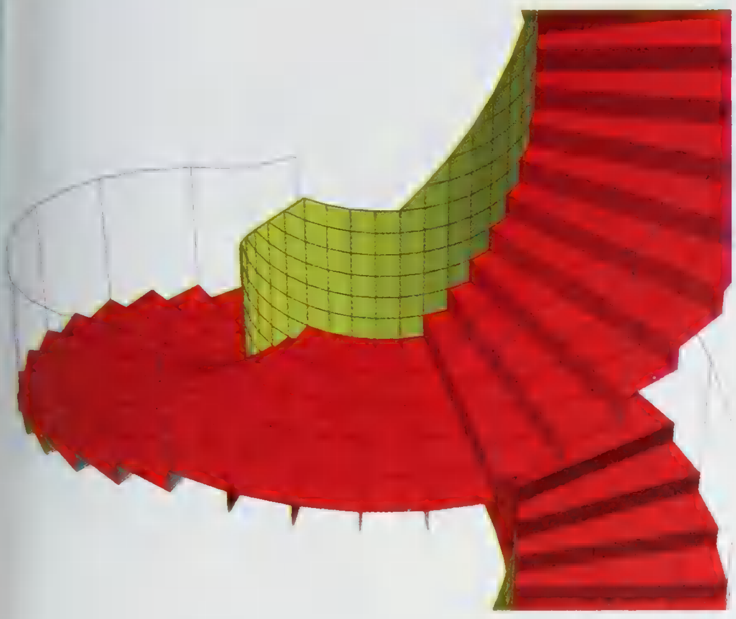
Webscape meets architects' rare need for in-depth 3D computer modeling. Lawrence Rocha, Assoc. AIA, vice president and director of information services at Honolulu-based Wimberly Allison Tong & Goo (WATG), says that for most architects the progression toward 3D modeling "is not something to jump into with both feet." Rocha adds, "For this next generation of CAD, it's good to start with small projects and small teams and to get support from software vendors." Revit Technology, a Massachusetts-based developer of parametric building technology (recently acquired by Autodesk), set up a representative in WATG's Newport Beach, California, office while firm members were initiating a project using the software provider's 3D capabilities, according to Rocha.

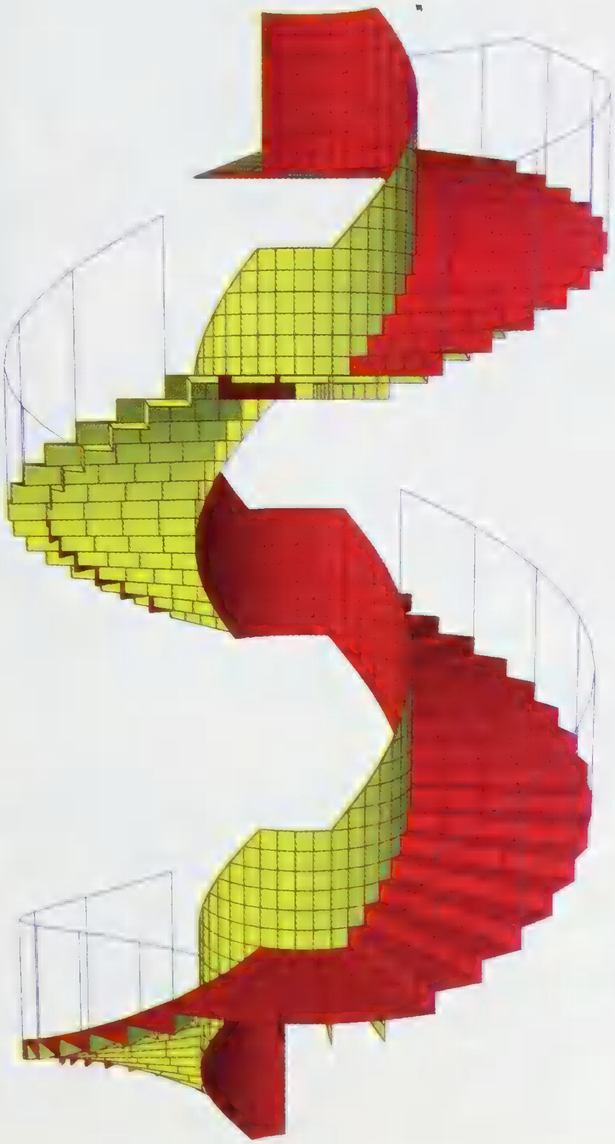
Seattle-based NBBJ, which cosponsored the first-of-its-kind "Virtual Model Actual Buildings" regional seminar, is slowly introducing the incorporation of 3D modeling into its design practice on selected projects, including a steel spiral staircase in a new corporate headquarters and Idaho Place, a University of Idaho multiuse facility.

For Idaho Place, NBBJ and Seattle structural engineer Skilling Ward Magnusson Barkshire (SWMB) agreed to a trial sharing of computer models standardized on Triforma 3D modeling software from Bentley. According to Carl Tully, NBBJ project architect, NBBJ allowed its 12-member team two weeks of software training. The firm used the schematic design phase to gain familiarity with the 2D version of the software and to draw much of the building by hand in order to develop a 3D understanding of the project in a traditional manner. "The modeling aspect turned out to be relatively easy to learn," says Tully. "The challenge of organizing the different section cuts, elevations, plans, and details required more consideration than with a 2D CAD drawing set."

"FOR THIS GENERATION OF CAD, IT'S GOOD TO START WITH SMALL PROJECTS AND TO GET SUPPORT FROM SOFTWARE VENDORS."

Ron Klemenic, SWMB president, states that the original desire of sharing files on a real-time basis was not feasible and, instead, nightly updates were exchanged between dedicated servers connected by a T1 line. The 3D modeling exercise paid off, according to Tully, who reports that junior designers were able to cut sections, spot conflicts, and raise





A helical staircase at Amjen's corporate headquarters in Seattle was manufactured from structural steel based on a computer model by NBBJ, which shared reference data with the engineer and the steel fabricator. The fabricator created its own model to guide computer-controlled marking and cutting equipment.

significant design issues earlier in the design process and at a much higher level than is typically expected.

Tully himself was able to spot a major issue when he reviewed the structural-steel 3D model overlaid with the concrete parking deck. "A discrepancy in alignment of the structural systems was detected and resolved in design development, which might not have been addressed until the construction documents phase," Tully says.

NBBJ was also able to extract data from the 3D computer model to guide a laser cutter, which created pieces for a physical model. Additionally, NBBJ was able to have the Triforma 3D structural model overlaid with a mechanical system 3D modeling program from Design Master Software. "Because this was a new process for us, we did not save time in the design phase or require fewer staff to complete the project," Tully says. "What we gained was more focused time on significant design work, because we were constantly working with a very real visual representation of the project and couldn't 'fake' any details."

Realizing the impossible

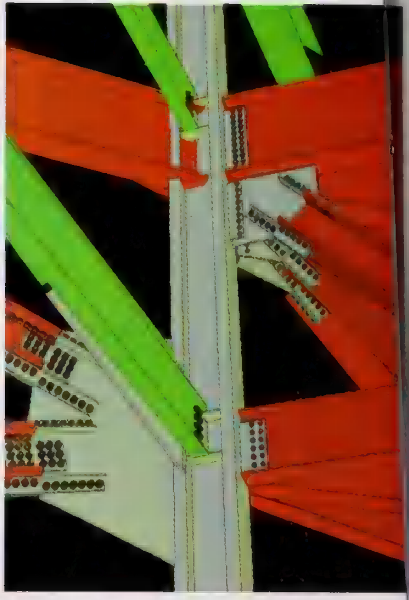
Idaho Place is on hold until Spring 2003, so the structural-steel fabrication has not been bid, and it is uncertain how much of the 3D model will come into play during manufacturing. However, NBBJ's design of two 30-foot tall steel staircases for Amgen's Seattle headquarters has made it through design, engineering, and manufacturing with the assistance of 3D modeling.

Amgen, which bills itself as the world's largest biotech company, wanted to encourage personal interaction among scientists through the use of "communication" stairs that would both foster and be a place for discussion. One stair represents chaos through its cacophony of forms, and the other is modeled on a double helix. Both are self-supporting structural-steel sculptures.

NBBJ architect Robert Leykam created numerous hand-drawn sketches and a 3D computer model in AutoCAD to help communicate the complex geometry of the stairs. He shared 2D AutoCAD drawings with the project structural engineer, KPFF Seattle, which used the drawings to help create a 3D model in its SAP 2000 structural engineering analysis program.

"You could not create a design like this by yourself as an architect, and KPFF could not have done it without the current technology available," says Leykam. "The connection analysis at welds, test loading diagrams, distribution of uniform loads, and analysis of other scenarios resulted in the use of less steel and less welds than I thought possible, and greatly contributed to the hovering effect of the helix stair."

Carolyn Weiss, project engineer for KPFF, says, "SAP 2000 provides 3D modeling and dynamic property analysis, so we were able to provide fundamental periods and other data in addition to presenting



Computer modeling of steel for Chicago's Soldier Field renovation assisted the need for complex structural connections to be designed and manufactured in a short time frame. As many as 20 angled and beveled members come together in connections that are smoothly erected in the project's 16-month schedule.

detailed images of how the stairs would look."

Leykam used the images to make subtle changes in details impacting the structures, but more importantly, the SAP 2000 3D models were provided to Portland, Oregon–based Columbia Wire & Iron Works, a 100-year-old iron and steel fabricator. However, because of legal implications, KPFF's 3D model was only used as a check set against Columbia's model, which was created on SDS2, a structural-steel-detailing software program. Weiss says, "We simply provided it for reference and included a disclaimer saying the dimensions have to be verified, but Columbia used it to make sure their working points were coming out right when they laid out the steel."

The deceivingly complex White Chapel benefited greatly from the creation of a 3D model by project steel fabricator A. Zahner, Kansas City, Missouri. Located at the Rose-Hulman Institute of Technology, Terre Haute, Indiana, the 5,000-square-foot chapel's main structure is a series of 14 rectangular tube arches shaped like a 3D Gothic arch.

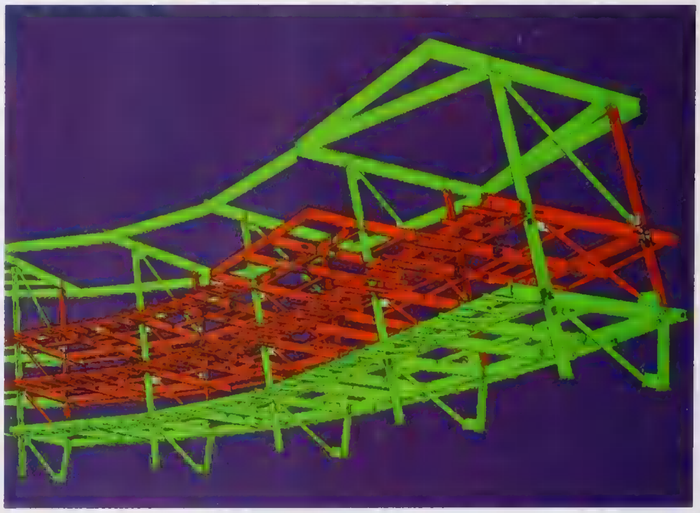
Bill Bradford, principal with Chicago-based VOA Associates, says, "The arches get smaller and shift off axis as you move toward the back of the structure. Viewing the computer model allowed us to realize that a rectangular tube connecting the top of the arches would provide limited bearing points for the decking." A round tube section was specified to connect the tops of the arches and provide a more suitable point of contact for roof decking along the entire length of the structure.

The 3D computer model created in AutoCAD by Zahner also made it clear that the first arch, which tilts out over the entry, was substantially different from the others, even though no two arches are the same. "If we didn't have the computer model, we may never have realized that the first arch is a parabolic arch instead of a circular arch like the others," Bradford said. This information helped with detailing the curtain-wall facade of the chapel. Zahner, which also fabricated the White Chapel's cladding system, used the computer model to help manufacture skylights for the building after no other company was found to effectively handle the complex geometry of the roof.

"WE WOULD NOT HAVE BEEN ABLE TO FIT THE NEW STRUCTURE IN AS PRECISELY WITHOUT 3D COMPUTER MODELING."

The renovation of Chicago's famed Soldier Field and a master plan for North Burnham Park is a joint venture of the local firm Lohan Caprile Goettsch Architects and Boston-based Wood + Zapata, with the latter having primary responsibility for the stadium design. The new configuration of the stadium saves the historic colonnades by removing the interior seating structure, lowering the playing field, and inserting a new set of 63,000 seats and 133 luxury suites into the existing perimeter structure.

Joseph Caprile, AIA, says, "At some places, the new structural steel is within 2 feet of the existing building. We would not have been able to fit the new structure in as precisely as we did without 3D computer modeling." Tony Montalto, project architect, had created some surface models of the project in Form•Z software to provide conceptual understanding of the design. He says considerable benefits were realized when structural engineer Thorton Tomasetti Engineers exported .dxf and .dwg files from its ProEngineer software for architectural review. "At some places, we have 10 to 20 pieces of steel coming together in complex connections. If we tried to detail this project in 2D, we would have ended up with problems," Montalto says.



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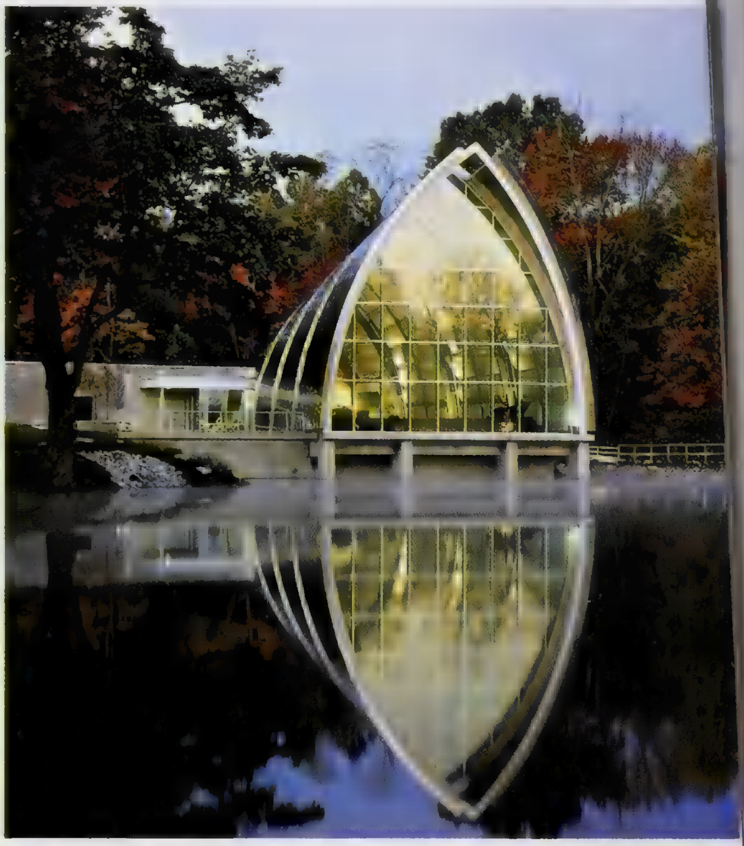
According to Montalto, another benefit of the steel-detailing software used on the project is the ability to create a database of parameters for creating connection details. "If a structural member type 'X' comes together with a member type 'Y,' the software can be programmed to establish a predetermined 'Z' type connection," Montalto says.

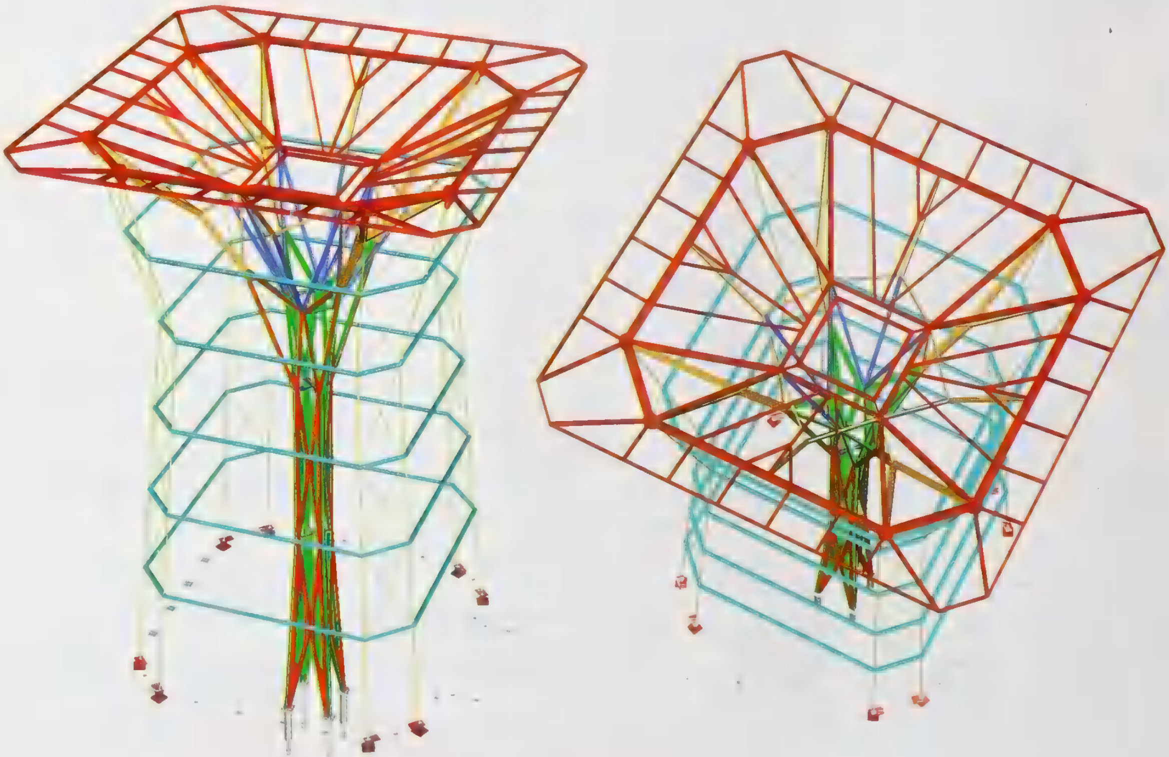
Risks and rewards

While it is possible to share computer models among professions, subcontractors, and trades, standard practices governing contracts and liability all but demand that architects require their structural engineers, detailers, and fabricators to create their own 2D drawings and 3D computer models. The cost of this redundancy may eventually make it possible to share computer models, suggests Robert Park, Columbia's chairman and C.E.O. "In a typical three- or four-story, 20,000-square-foot building requiring 1,000 tons of structural steel, the detailing would traditionally cost about $140 dollars per ton," says Park, who has fabricated steel for Gehry projects and for other architects designing complex steel structures that benefit from computer modeling. "If we received a usable computer model that could go right into an automated detailing program, the cost would come down to $60 per ton."

Although $80,000 is sometimes not a significant amount on a project, there are other savings. "If you then provide the fabricator with a model that can be easily translated to run the CNC equipment, the traditional 10 man-hours per ton for fabrication can be reduced by about 3 man-hours," says Park. Theoretically, this could bring project savings between $100,000 and $150,000, depending on regional labor costs. Park adds that efficient sharing of a computer building model would accelerate the steel fabrication of this theoretical project by three weeks.



Rose-Hulman's White Chapel by VOA has a complex structural-steel system modeled in 3D by fabricator A. Zahner to ensure proper understanding of the member alignment, cladding placement, and other systems interactions.



The structural core of the 90-foot glass atrium at the headquarters for California Public Employees Retirement System (CalPERS) supports a glass curtain-wall canopy. Columbia Wire & Iron Works created a structural-steel computer model (right). The computer model confirmed that the design was feasible, had appropriate connections, and was actually able to be fabricated. Without a computer model, the structure would have been too complicated to build.

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Sharing should not be a liability

Because the legal component of the building process is greatly affected when team members share drawings, it takes the influence of a major architect, such as Frank Gehry, to help change the industry practice. Gehry Technologies' Dennis Shelden says, "Architects are now capable of doing what is traditionally part of the construction team's responsibility, and the risks and rewards are substantial." He notes that in conventional design processes, incongruities between structure and other systems may be papered over until the project moves out of the design team's scope.

"THERE ARE FEWER ERRORS AND OMISSIONS IF THE 3D COMPUTER MODELING PROCESS IS FULLY COORDINATED."

"Sharing digital information provides the possibility to change that, even though the process may fly in the face of what lawyers will tell you," Shelden says. "The upside is that there are significantly fewer errors and omissions if the 3D computer modeling process is fully coordinated."

While Gehry is the leading architectural adapter of 3D computer modeling of structural steel, the projects shown here illustrate the growing awareness about the benefits of these processes and the increasing eagerness of architects to incorporate them into their practices. ■

Interoperability is a few clicks away

3D graphic software programmers are making strong moves toward low-cost applications that will let all building system programs interact with minimal effort. Rhinoceros, Bentley, AutoCAD, and others are making good headway in this effort. Bentley's Triforma 3D modeler is getting good reviews. CATIA is distributed by IBM, so it can be made cost competitive for any number of reasons.

Because of its more unified A/E/C industry, Europe is advanced in sharing 3D computer models for design and construction, according to Joseph Burns, P.E., AIA, a principal with Chicago-based Thorton Tomasetti Engineers. "Computer integrated manufacturing steel (CIMsteel) was started in Europe as an electronic data interchange standard for manufacturing steel," Burns says. "AISC has adapted the CIMsteel standard, and a number of software companies are writing to that standard, so there will be interchanges between design, analyzing, and detailing programs that ultimately deal with CNC machines."

However, Burns notes that a more comprehensive object-modeling standard is being developed by the International Alliance for Interoperability (IAI). "The IAI is working to create standards for all of construction industry foundation classes, steel structures being just one of them," Burns says.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "3D Computer Modeling Is Becoming the Tool of Choice for Designing Steel Structures" using the learning objectives provided.
- Complete the questions below, then fill in your answers (page 210).
- Fill out and submit the AIA/CES education reporting form (page 210) or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. Intelligent building object models can do all except which?
 a. produce new material takeoffs
 b. maintain predetermined proportions
 c. unify all building systems
 d. expand or contract with a click and drag

2. The ultimate benefit of 3D architectural computer modeling will be which?
 a. the unification of all building systems
 b. production of new material takeoffs
 c. maintenance of predetermined proportions
 d. expansion or contraction with a click and drag

3. The currrent legal system encourages architects to require structural engineers, detailers, and fabricators to do which?
 a. use the architect's schematic computer model
 b. reduce the cost of redundant model building
 c. create their own 3D computer models
 d. share the cost of 3D computer models

4. The NBBJ 3D modeling exercise did not pay off in which way?
 a. cutting sections
 b. spotting conflicts
 c. raising significant design issues earlier in the design process
 d. expanding and contracting the model

5. Which did not contribute to the use of less steel and fewer welds in the design of the complex stairs?
 a. the cacophony of forms
 b. test loading diagrams
 c. distribution of uniform loads
 d. connection analysis at welds

6. The influence of a major architect is needed to help change the industry practice for which reason?
 a. because publicity will make the change acceptable
 b. because funding for the initial project is hard to get
 c. because the legal component of the building process is affected
 d. because it forms a new school of architecture

7. The benefit of fully coordinated 3D computer modeling is which?
 a. the members become e-smart
 b. there are fewer errors and omissions
 c. the cost of producing the model is lower
 d. the legal implications are lessened

8. Computer models with e-smart members provide all except which information?
 a. orientation in space
 b. start and end points
 c. connection details
 d. hang points

9. The working computer model allows an understanding formerly not available until when?
 a. schematic design
 b. construction
 c. model building
 d. shop drawings

10. The time benefit of sharing 3D computer models is which?
 a. 10 man-hours per ton of steel
 b. acceleration of the steel fabrication
 c. 3 weeks per ton of steel
 d. reduction of the steel fabrication

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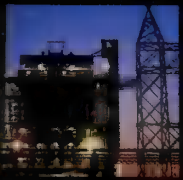

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Floor Underlayment

A strong, fast-applying gypsum concrete that delivers exceptional compressive strength, sound control and fire-resistance properties.

Thanks to its wide range of installation and performance benefits, poured gypsum concrete is the choice for more residential and commercial construction projects than any other cementitious underlayment.

And now it's better than ever ...

A New Level of Performance

Higher Strength

United States Gypsum Company's new LEVELROCK® Brand Floor Underlayment offers a higher range of compressive strengths than any other gypsum concrete product.

That means no flaking, no dusting, no chipping and no cracking. LEVELROCK Brand underlayments provide exceptionally durable, acoustically superior floors that consistently deliver best-in-class performance.

Superior Quality

United States Gypsum Company has also rewritten the book on quality assurance. LEVELROCK Brand Floor Underlayment is installed by a network of trained contractors, supported by U.S. Gypsum Company quality control teams. The result is a complete design/build solution that ensures reliable performance, industry-leading quality and superior value.

Benefits

LEVELROCK Brand Floor Underlayment has established new standards for poured gypsum flooring performance and quality.

Strength

LEVELROCK Brand Floor Underlayments deliver compressive strengths ranging from 2,500 psi to 8,000 psi. That's the highest strength range in the industry … and it makes LEVELROCK Brand underlayment the choice for reliable floor performance in all types of construction. Whether used on residential, commercial or institutional floors, LEVELROCK Brand underlayment delivers the strength to eliminate flaking, dusting, chipping and shrinkage cracking.

Weight

A 3/4-inch-thick LEVELROCK Brand underlayment floor weighs approximately 7.2 to 8.1lbs./sq. ft. and has a dry density of only 115-130 lbs./cu. ft. It's one of the lightest-weight cementitious underlayments available, making it an ideal solution for both renovation and new construction.

Versatility

The gypsum floor underlayment is typically applied at 1/2- to 3/4-inch thicknesses, but may be applied up to 3 inches thick in a single application over concrete and wood-based subfloors. It can be finished with a wide variety of floor coverings, including carpeting, ceramic tile, wood laminate, hardwood and vinyl.

Crack Resistance

LEVELROCK Brand underlayment expands slightly upon setting, providing reliable protection against shrinkage cracking over the entire surface.

Sound Resistance

During application, the underlayment slurry mix finds and seals cracks and sound channels.

Abuse Resistance

The high-strength LEVELROCK Brand underlayment formulation protects against wear and cracking resulting from trade traffic during construction, and ensures long-lasting performance.

Fire Resistance

All LEVELROCK Brand underlayment systems are certified by Underwriters Laboratories. One- and two-hour ratings are available for wood frame floor/ceiling assemblies, and four-hour ratings are available for precast concrete floor/ceiling assemblies.

Cost Efficiencies

LEVELROCK Brand underlayment installs quickly and cost effectively. The product requires minimal subfloor preparation — there's no need for expensive surface pre-treatments. Depending on the floor layout, up to 30,000 sq. ft. of LEVELROCK Brand underlayment can be installed in a single day. It all adds up to substantial installed cost savings.

Trained Contractors

United States Gypsum Company has established a network of trained LEVELROCK Brand underlayment applicators who work closely with the company's quality control teams to ensure professional-quality results on every job.

Compressive Strength Tests

Every LEVELROCK Brand underlayment pour is tested (per modified ASTM C472) to determine the compressive strength, so contractors, specifiers and building owners are able to know exactly what performance they're getting.

Products

United States Gypsum Company offers a family of LEVELROCK Brand Floor Underlayments designed to meet the specific requirements for a wide range of new construction, repair and renovation applications.

	LEVELROCK® Brand Floor Underlayment 2500	LEVELROCK® Brand Floor Underlayment 3500	LEVELROCK® Brand Floor Underlayment 4500	LEVELROCK® Brand Floor Underlayment RH (Radiant Heat)	LEVELROCK® Brand Floor Underlayment PROFLOW™
Description	An economical, high-compressive strength choice for multifamily and light-commercial construction.	Ideal for use as a hard surface upgrade in multi-family projects and as a topping to correct cracked and uneven floors in commercial applications. It offers excellent performance for high-traffic areas and wood frame construction.	An exceptionally high-strength product that is ideal for floor corrections over concrete in heavy-traffic commercial and institutional applications.	Designed specifically for use over radiant tubes. May be used with radiant floor heating systems up to 150 degrees F.	The highest strength gypsum concrete underlaymen in the industry. This self-leveling product applies from featheredge to 1-inch thick over concrete slabs, pre-stressed concrete and concrete planks. Can be used as a finished floor[1].

Product Selector

Building Type	2500	3500	4500	RH (Radiant Heat)	PROFLOW
Single-Family	●			●	
Multifamily	●	● For high-traffic areas		●	
Light Commercial	●	● For high-traffic areas		●	●
Commercial/Retail-Office		●	● For heavy-use areas		●
Hotel/Motel	●	● For high-traffic areas	● For heavy-use areas		●
Institutional		●	● For heavy-use areas		●
Subfloor Type					
Plywood and OSB	●	● For high-traffic areas		●	
Heavy Wood Plank	●	●	●	●	
Concrete	●	●	●	●	●
Concrete Plank	●	●	●	●	●
Concrete Repair/Leveling		●	●		●
Radiant Heat				●	● For topping applications only

Physical Properties

	2500	3500	4500	RH (Radiant Heat)	PROFLOW
Strength (psi)	2,500 - 3,200	3,500 - 4,000	4,500 - 5,500	2,500 - 3,200	6,000 - 8,000
Density (lb./cu.ft.)	115	120	125	115	130
Weight (lb./sq.ft.—3/4-inch thickness	7.2	7.5	7.8	7.2 (14.4 at 1-1/2-inch thickness[2])	8.1 (5.4 at 1/2-inch thickness[2])

1 LEVELROCK Brand Floor Underlayment PROFLOW can be used as a finished floor when covered with the approved coating system from Richard James Specialty Chemical Co. Contact your local LEVELROCK Brand underlayment sales representative for further details.

2 Reflects typical application thickness.

UL Designs and Code Approvals

UL Designs	LEVELROCK Brand Floor Underlayments meet the following UL designs: G230, G516, J917, J919, J920, J924, J927, J931, J957, J966, J991, J994, K906, L206, L501, L505, L511, L512, L513, L514, L518, L521, L524, L525, L528, L529, L530, L534, L535, L536, L537, L541, L544
Model Building Code Approvals	International Conference of Building Officials (ICBO) Report No. ER-5885 Building Code and Code Administrators International, Inc. (BOCA) Research Report No. 21-52 Southern Building Code Congress International (SBCCI) Evaluation Report No. 2114
New York City Department of Buildings MEA (Materials and Equipment Acceptance)	MEA 236-01-M

For commercial, institutional, multifamily and single-family applications, Levelrock Brand Floor Underlayment delivers practical solutions that literally floor the competition.

Office

High strength and outstanding flowability make Levelrock Brand underlayment an ideal choice for repairing and leveling cracked or uneven structural or precast concrete.

Reduced Renovation Costs The use of Levelrock Brand Floor Underlayment 3500 cut installation costs in half compared to using self-leveling portland cement during the recent $70 million renovation of a 20-story office building in downtown Philadelphia.

Approximately 525,000 sq. ft. of Levelrock Brand underlayment was applied over the building's existing concrete floors. Due to the product's excellent bonding properties, no "shot blasting" was required.

The existing floors were simply cleaned and primed . . . and the gypsum underlayment was poured for a smooth, level, crack-free surface.

Cracked and uneven concrete floors (left) at this Philadelphia office building were corrected by applying Levelrock Brand Floor Underlayment (center: newly poured gypsum underlayment; right: new, smooth gypsum concrete floor).

Retail

Whether it's new construction or renovation, Levelrock Brand underlayment offers the durability, application ease and versatility to meet nearly any retail construction requirement.

A Fast-Applying, High-Strength Surface Levelrock Brand underlayment helped developers meet a tight construction schedule during renovation of an existing retail space in suburban Chicago. Following application of approximately 18,500 sq. ft. of Levelrock Brand Floor Underlayment 3500, construction trades were back on the job within 24 hours.

The underlayment smoothed and leveled the existing concrete surface and provided a high-strength base for application of carpeting and wood floors.

Construction trades were able to resume work within hours of the gypsum underlayment application at this Chicago area retail location.

Multifamily

For wood frame multifamily construction, Levelrock Brand underlayment offers an unbeatable combination of light weight, quick application and excellent sound control.

The Right Choice for Condominium Construction Developers of a high-end condominium project in Milwaukee, Wis., chose Levelrock Brand Floor Underlayment 2500 for its high strength and acoustical performance. More than 40,000 sq. ft. of underlayment was applied in 53 luxury units in the $16 million, seven-story complex. The underlayment weighs only 7.2 pounds per square foot.

Levelrock Brand Floor Underlayment 2500 applied quickly and delivered superior sound control at the High Bridge Condominiums, in Milwaukee, Wis.

Radiant Heat

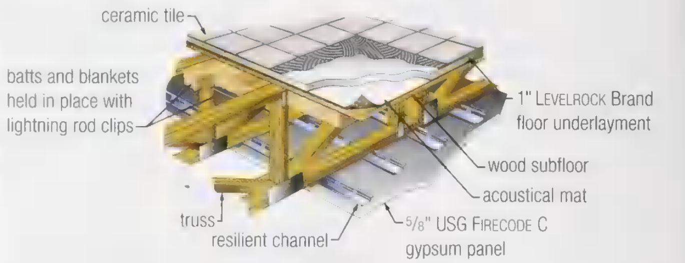
Ideal Thermal Mass Levelrock Brand Floor Underlayment RH (Radiant Heat) offers an ideal thermal mass to ensure smooth, even distribution of radiant heat. The non-shrinking nature of the product locks tubes in place, preventing noise and tube chafing.

Sound Control

A variety of sound-tested LEVELROCK Brand underlaymet floor assemblies is available. Testing was conducted in conformity with ASTM E90 and E492.

Sound System 1

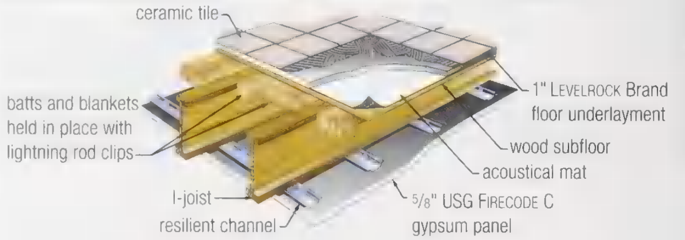
Floor Covering	Rating[1]
None	STC: 61
Carpet, 24 oz. with 7/16 in. 6 lb. pad	IIC: 73
Ceramic tiles, 5/16 in. thick, nominal 12 x 12 in. adhered with Type 1 mastic	IIC: 56
Sheet vinyl 0.007 in. (2mm) thick	IIC: 55


ceramic tile
batts and blankets held in place with lightning rod clips
1" LEVELROCK Brand floor underlayment
wood subfloor
acoustical mat
truss
resilient channel
5/8" USG FIRECODE C gypsum panel

Sound System 2

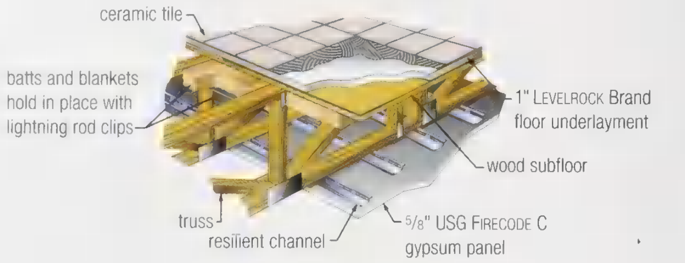
Floor Covering	Rating[1]
None	STC: 60
Carpet, 24 oz. with 7/16 in. 6 lb. pad	IIC: 77
Ceramic tiles, 5/16 in. thick, nominal 12 x 12 in. adhered with Type 1 mastic	IIC: 56
Sheet vinyl 0.007 in. (2mm) thick	IIC: 55
Wood laminate floor	IIC: 52

Note: L544 requires minimum 2 layers 1/2 in. FIRECODE "C" SHEETROCK Brand Gypsum Panels to achieve a 1 hr. fire rating.


ceramic tile
batts and blankets held in place with lightning rod clips
1" LEVELROCK Brand floor underlayment
wood subfloor
acoustical mat
I-joist
resilient channel
5/8" USG FIRECODE C gypsum panel

Sound System 3

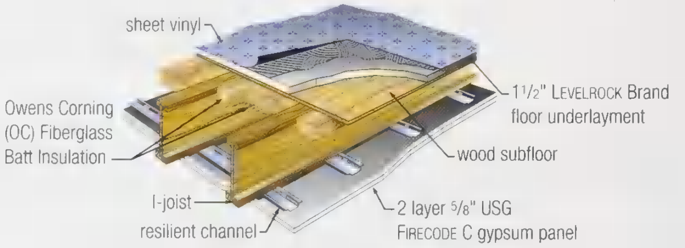
Floor Covering	Rating[1]
None	STC: 58
Carpet, 24 oz. with 7/16 in. 6 lb. pad	IIC: 76
Sheet vinyl 0.007 in. (2mm) thick	IIC: 48


ceramic tile
batts and blankets hold in place with lightning rod clips
1" LEVELROCK Brand floor underlayment
wood subfloor
truss
resilient channel
5/8" USG FIRECODE C gypsum panel

Sound System 4

Floor Covering	Rating[2]
None	FSTC: 64
Sheet vinyl	FIIC: 49

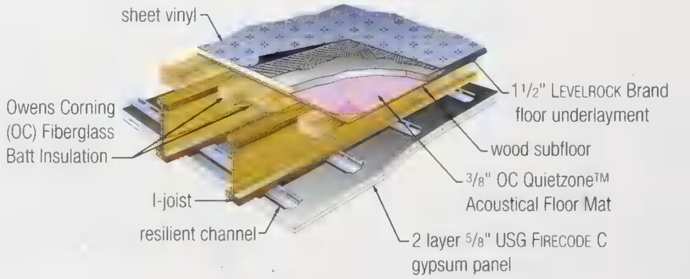
Note: Sound system tested by Owens Corning at the National Research Council of Canada (NRCC).


sheet vinyl
Owens Corning (OC) Fiberglass Batt Insulation
1 1/2" LEVELROCK Brand floor underlayment
wood subfloor
I-joist
resilient channel
2 layer 5/8" USG FIRECODE C gypsum panel

Sound System 5

Floor Covering	Rating[2]
None	FSTC: 69
Sheet vinyl	FIIC: 58

Note: Sound system tested by Owens Corning at the National Research Council of Canada (NRCC).


sheet vinyl
Owens Corning (OC) Fiberglass Batt Insulation
1 1/2" LEVELROCK Brand floor underlayment
wood subfloor
3/8" OC Quietzone™ Acoustical Floor Mat
I-joist
resilient channel
2 layer 5/8" USG FIRECODE C gypsum panel

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1 Per ASTM E413 and E989.
2 Per ASTM E336 and E1007.

Installation

LEVELROCK Brand Floor Underlayment installs quickly and cost effectively. The gypsum concrete floor sets within two hours and is ready for continued trade construction traffic the next day.

1. Laser Survey

To correct uneven surfaces, the applicator may use a laser survey to determine the exact thicknesses required for a level application.

2. Surface Preparation

LEVELROCK Brand Floor Underlayment requires minimal surface preparation. Perimeter joints and penetrations are sealed and the existing surface is simply cleaned and primed.

3. Design Mix

LEVELROCK Brand Floor Underlayment is mixed on site using sand, bagged gypsum cement and water. The concrete mix is then pumped through hoses to the application.

4. Pouring and Screeding

The underlayment concrete is poured over the surface (below left) and screeded smooth to the desired thickness (below right).

5. Quality Control

LEVELROCK Brand underlayment applicators create on-site cube samples for each application. The samples are tested for compressive strength (per modified ASTM C472) at USG's Research and Technology Center and the results are provided to specifiers and building owners upon request.

6. Floor Coverings

LEVELROCK Brand underlayment accepts a variety of finished floor coverings, from carpet and vinyl to wood and ceramic tile. Follow installation directions per the floor covering manufacturer and see the LEVELROCK Brand underlayment floor coverings application guide (IG1457) for further details.

7. Finished Floor System

LEVELROCK Brand Floor Underlayment PROFLOW provides a finished wear surface when used with the approved coating system, available from Richard James Specialty Chemical Company. Contact your local United States Gypsum Company sales representative for more information.

Trademarks
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Digital Architect

Design Software for the Home Front

By Alan Joch

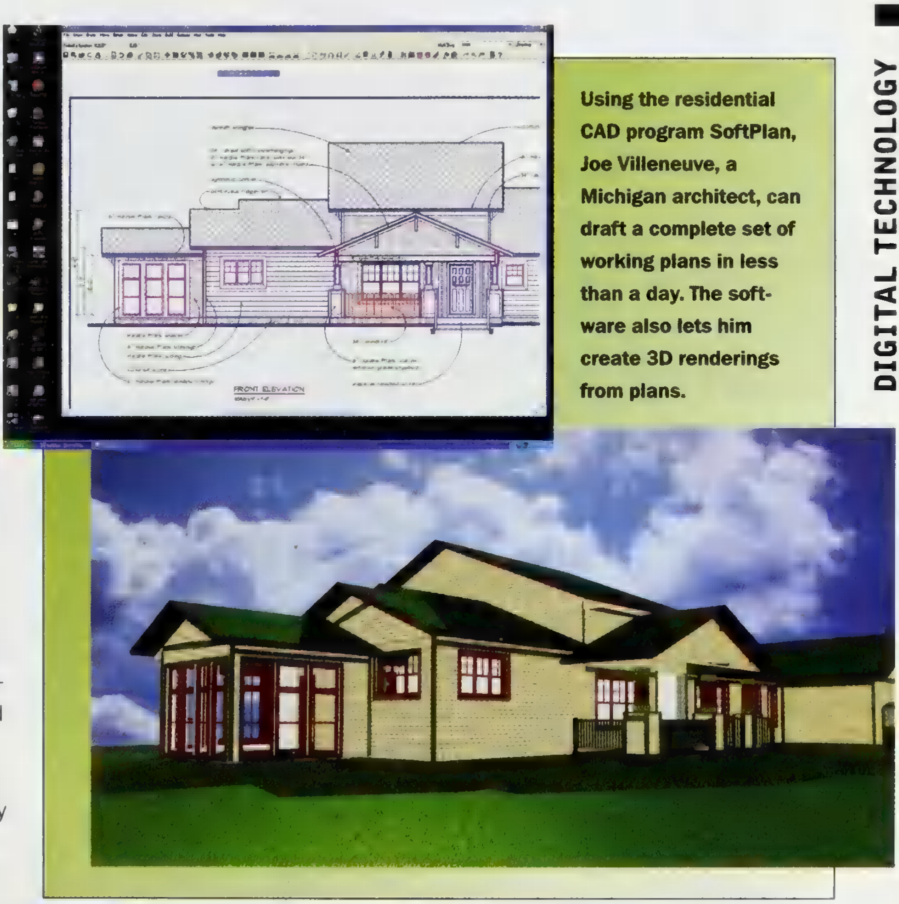
It's all in his head. At least that's how residential architect Bob Abell explains his dilemma. His mind-set is to work intuitively to create a new design for his residential clients in the affluent suburbs along Lake Michigan, just north of Chicago. "I'm constantly pulling ideas out of the air," says Abell, AIA, an associate with Geudtner and Melichar Architects in Lake Forest, Illinois.

Abell, like many other residential architects, says residential design requires special software tools that accommodate the wide variety of floor plans, roof lines, construction materials, and visual flourishes that distinguish homes from standard, boxy commercial or industrial buildings. The right software can also make the difference between success and failure for a small firm—especially important because a majority of residential architects are either solo practitioners or members of firms with 20 or fewer employees, according to the AIA's 2000/2002 Firm Survey.

Fortunately, residential architects no longer have to shoehorn engineering-geared applications to fit their needs, or stick with drawing by hand and miss out on the advantages of design automation. More choices are now available specifically for residential work, making it easier, more creative, and more economically viable to serve this niche than ever before.

Two camps

Residential design software falls into two general categories: programs that augment the popular AutoCAD drafting engine and those that spring from a different technological platform. Both groups share something in common: a strategy for embedding intelligent software components into the basic drafting tool so architects can quickly and accurately plug in dimensionally correct, prefabricated representations of windows, doors, and other residential elements rather than tediously drawing them by hand. In addition, the latest design applications can help architects quickly develop renderings and 3D models of their designs to help a client understand and commit to a proposal.



Using the residential CAD program SoftPlan, Joe Villeneuve, a Michigan architect, can draft a complete set of working plans in less than a day. The software also lets him create 3D renderings from plans.

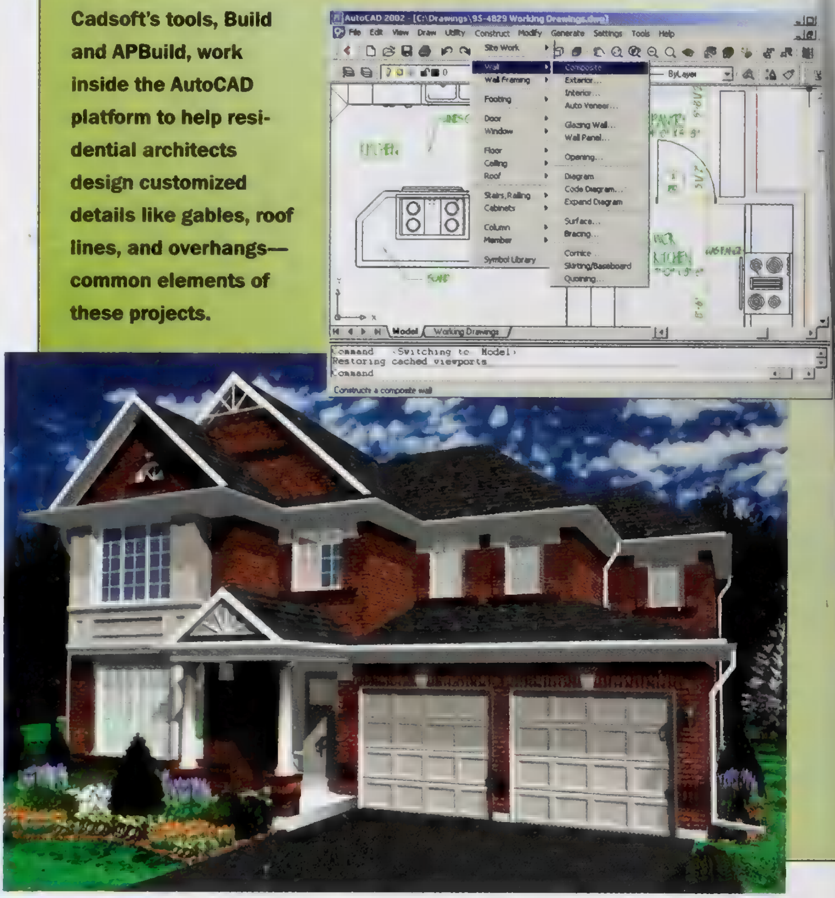
Two leading products in the AutoCAD camp are Build and APDesign from Cadsoft Corporation. The programs wrap AutoCAD compatibility inside a set of software tools that automate many design functions, such as inserting windows and doors into wall units. APDesign also lets architects work out the flow of a design without getting bogged down in the details of representing everything with straight lines and geometric shapes. "My roofs are nuts," says G. Michael Tucker, an architect with Sweetbriar Architects Atlanta in Alpharetta, Georgia. "I have to vary eave lines, vary pitches. APDesign allows me to work with surfaces, then accurately draw the roof, even if I want to introduce a custom section that's 4 or 5 feet higher than the rest of the roof line."

Tucker also gives APDesign high marks for its ability to create a model of the framing that will support the house. "The framing shows them each floor in an isometric view," he says. That type of model can also eventually help construction crews visualize the architect's intent. "It can save thousands of dollars by showing them what the finished project will look like. It helps architects stay out of the remodeling business," Tucker quips.

APBuild user John Neufeld, founder of John Leslie Neufeld Architects in Fairfax, Virginia, specializes in designing large custom homes, up to 25,000 square feet, in the Washington, D.C., area. He begins his designs by depicting walls, which then become the basis for subsequent architectural details. "After I draw a wall, I tell the program what height and material I want for it. If I'm designing a brick veneer house, I then see that in three dimensions. At any point, I can take the model and turn it into a 3D view. All of this saves me a lot of work that I don't have to do by hand."

Alan Joch is a technology and business writer based in New England. Contact him at ajoch@monad.net.

WWW For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at **architecturalrecord.com**.



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Restoring cached viewports
Command
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Constructs a composite wall

Cadsoft's tools, Build and APBuild, work inside the AutoCAD platform to help residential architects design customized details like gables, roof lines, and overhangs—common elements of these projects.

Nevertheless, there's a tradeoff when using sophisticated design software. Though the built-in tutorial is helpful, APBuild's complexity means that designers may need as much as a full year of familiarity before they become "speedily functional" with the program, Neufeld says. Also, for aesthetic reasons, he still prefers to do some parts of the design by hand. "You want the front elevation of a house to feel nice and comfortable," he explains. "It gives it more life when you draw it by hand. Computer drawings are too precise. They look dry and dead. Almost always, I do the fronts by hand."

As some residential architects use AutoCAD as the benchmark to measure what alternative design packages are capable of, its parent company, Autodesk, is making a new push to court architects—most notably with the purchase of the parametric design program Revit. "We're taught as architects never to draw anything twice, to avoid conflicts," says Peter Bruckner, an architect with Designers CADD Company, a Cambridge, Massachusetts, AutoCAD reseller and service bureau for electronic renderings and walk-throughs. "With Revit, you can see whatever you draw in a number of different coordinated views. It's a tool that understands the designer's intent." Third-party developers for Revit are actively creating new components for elements like doors, windows, and lighting fixtures and making them available via the Web. Manufacturers, like window maker Pella, are also making available dimensionally correct software files of their product lines.

DIGITAL TOOLS FOR RESIDENTIAL ARCHITECTS HELP THESE SMALL FIRMS CREATE CUSTOM DETAILS QUICKLY.

Clean slate

While AutoCAD continues directly or indirectly to serve a large base of residential architects, some in the industry have opted for a different platform. David L. Wolff, AIA, became an expatriate of large commercial architectural firms three years ago and now runs a one-man shop in Portland, Oregon. Currently, a majority of his work is residential, including a new 28,000-square-foot house that will be built along the coast of Oregon. When he went solo, Wolff also decided to move to Graphisoft's ArchiCAD because he found it fit his working style better. Now he could build an electronic model of a home and add windows or doors simply by highlighting an icon and snapping it in place. "'Boom! Everything's done. You can then edit, add perspective, or turn it into 3D on the fly," Wolff says. "You don' t have to construct a 3D model afterward from 2D drawings."

He says that kind of software intelligence is more than just a handy convenience. The ability to perform custom work quickly is essential to keeping his company economically viable. "My competitive advantage is to have the machine do the work," Wolff says. "I'm not really a computer person at heart, but for me to compete with the larger architectural offices, technology is necessary."

And unlike architect Neufold's preference for hand-drawn elevations, Wolff credits computer-generated renderings with helping him sell his designs to clients. "I come from a builder background; I was out there swinging a hammer. I went to school with people with M.F.A. [Master of Fine Arts] degrees who would create these gorgeous renderings that I couldn't do. ArchiCAD does that for me, and this really helps me with the presentation aspect of my work."

Joe Villeneuve, architect and owner of Concepts in Designs in Plymouth, Michigan, uses a residential-geared package called SoftPlan, by SoftPlan Systems, for designs that focus on energy efficiency for clients in metropolitan Detroit. He likes the software's ability to automatically generate elevations, 3D models, and materials lists from on-screen representations. "I can design right down to the drywall screws," he says. "The software understands the construction behind the lines that I draw. I can have a floor plan and an elevation on the screen. If I edit one, the software automatically changes the other."

Before using SoftPlan, Villeneuve drafted plans by hand. Within two weeks of using the program, he was able to work as quickly with SoftPlan as with pencil and paper. "In a month, I was doing it faster with the computer," he says. "I can do a complete set of working drawings for a 25,000-square-foot house in less than a day. It gives me time to devote to my business as opposed to just doing production work."

Personal comfort

Users of residential design software say the most important criterion for choosing an application isn't allegiance to a particular platform, but rather, finding software that lets an architect work comfortably. "You have to see the interface and get a sense of how compatible it is with your personal style," Bruckner says. He suggests that evaluations begin with two simple questions: "Is it logical? And is it simple to use?"

Decisions shouldn't be made by watching a canned demo, he warns, because demos may look impressive, but they do little to show what it takes to achieve those results. Rather, evaluate the program using real-life tasks. After all, he says, "This is a matter of finding a long-term relationship." ■

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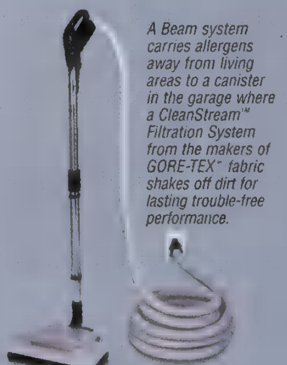

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Architects' homes, adapted to diverse settings, embody spirited innovation

Viewing an architect's home stimulates a voyeuristic impulse—it promises us a very special personal window into the designer's passions, needs, and philosophy. We assume that these homes must serve, as well, as laboratories for experimentation with unconventional design ideas, materials, and innovations. Architects are surely the first to know about the new new thing: the coolest in light fixtures, furniture design, composite materials, and visually dramatic windows. Unlike the open purse strings often evident in the budgets for houses architects are commissioned to design, their own dwellings are usually more humble in cost, making a strong case for original thinking. The four architects' homes featured here come exclusively from modest-size firms, which RECORD is pleased to recognize. And what a diversity of environments! Ed Jones's Phoenix oasis tells you immediately what makes desert living appealing; the Matthews family's island retreat speaks to the seafaring spirit in us all; Jonathan Segal's urban live/work enclave reigns in San Diego's once-marginal neighborhood of Little Italy; and the thought-provoking carriage-houselike Timepiece House cozies into a historic district of plush mansions in bucolic Virginia. Feast your eyes on these unique delights.—*Jane F. Kolleeny*

BRIEFS

Apollo Energy Systems in Fort Lauderdale, Florida, is developing a new fuel-cell system for powering homes and hopes to have prototypes by year-end. These alkaline electrolyte cells have several advantages over systems already developed, including lower cost and greater efficiency. For more information, visit www.electricauto.com.

The firm of Native American Photovoltaics has brought power to the underemployed Navajo Indian population in an innovative way. Constructed out of photovoltaic panels and recycled utility poles, each unit generates one kilowatt of electricity to power a basic family's needs. Various low-cost sustainable implementation plans are proposed.

Rival companies compete in Japan for custom toilets for the home. Such toilets glow in the dark, lift up their lids, play relaxing music, massage and wash the buttocks, and measure body fat. That's nothing. Toilets five years in the future will recognize and talk to users, and measure weight, fat, blood pressure, heart beat, urine sugar, albumin, and blood in the urine. Help!

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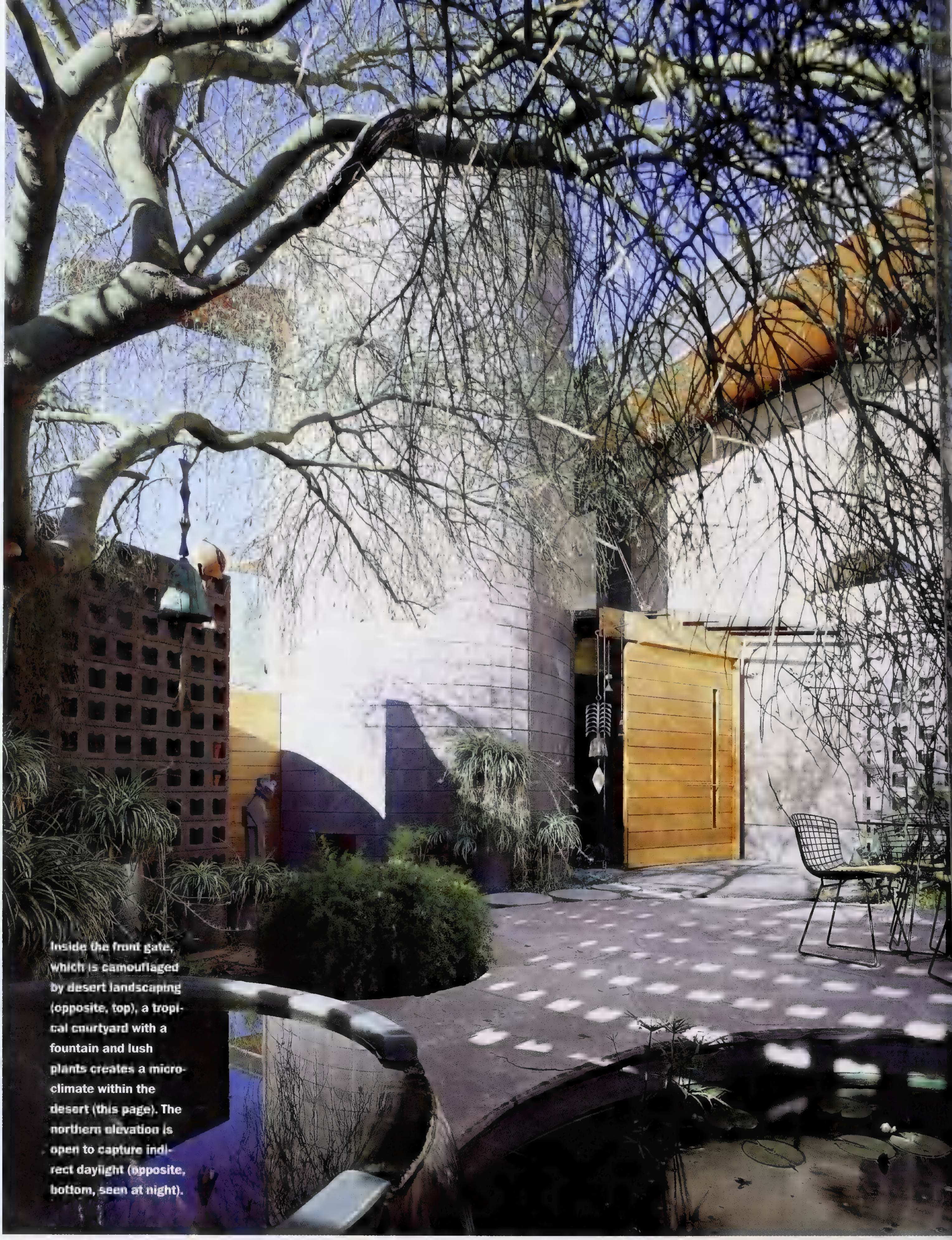
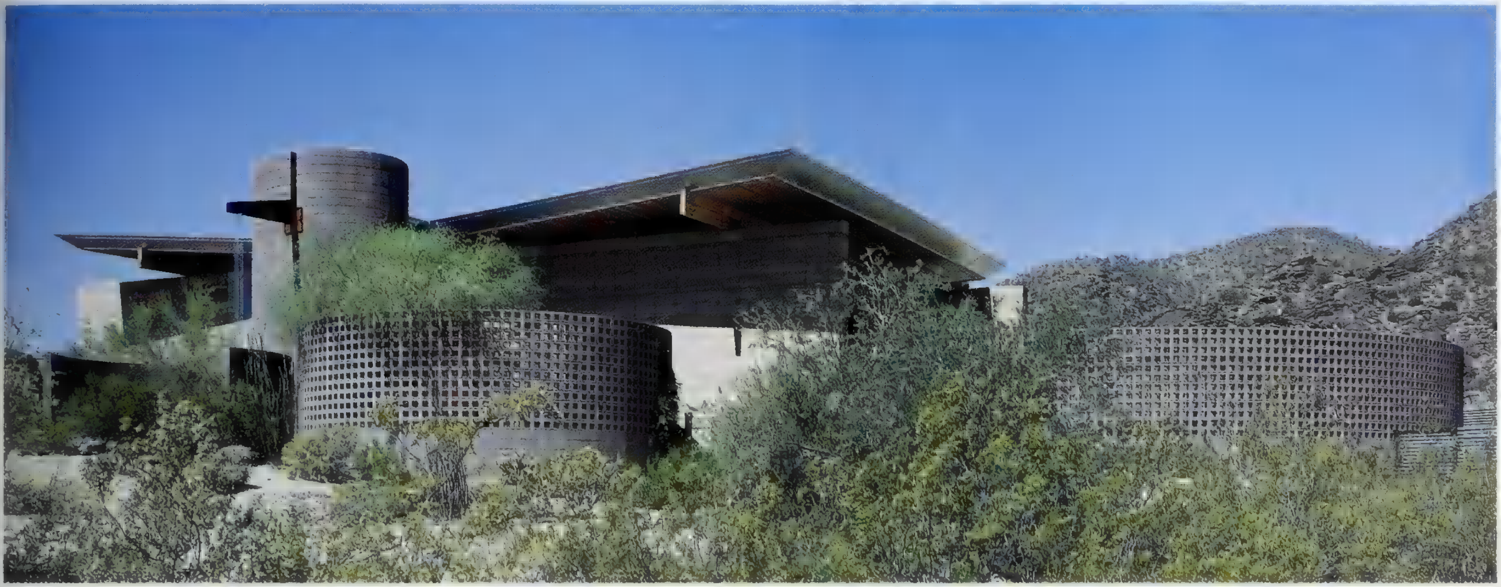
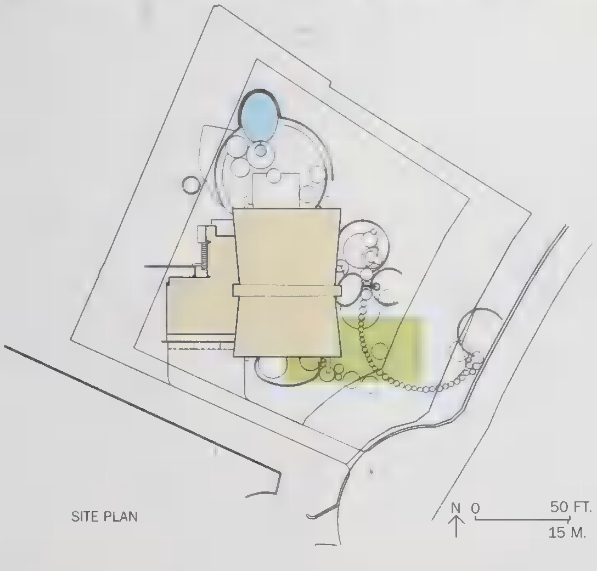


Inside the front gate, which is camouflaged by desert landscaping (opposite, top), a tropical courtyard with a fountain and lush plants creates a microclimate within the desert (this page). The northern elevation is open to capture indirect daylight (opposite, bottom, seen at night).

In a sprawling Phoenix suburb, **Eddie Jones** creates a modern Mexican hacienda full of surprises





SITE PLAN

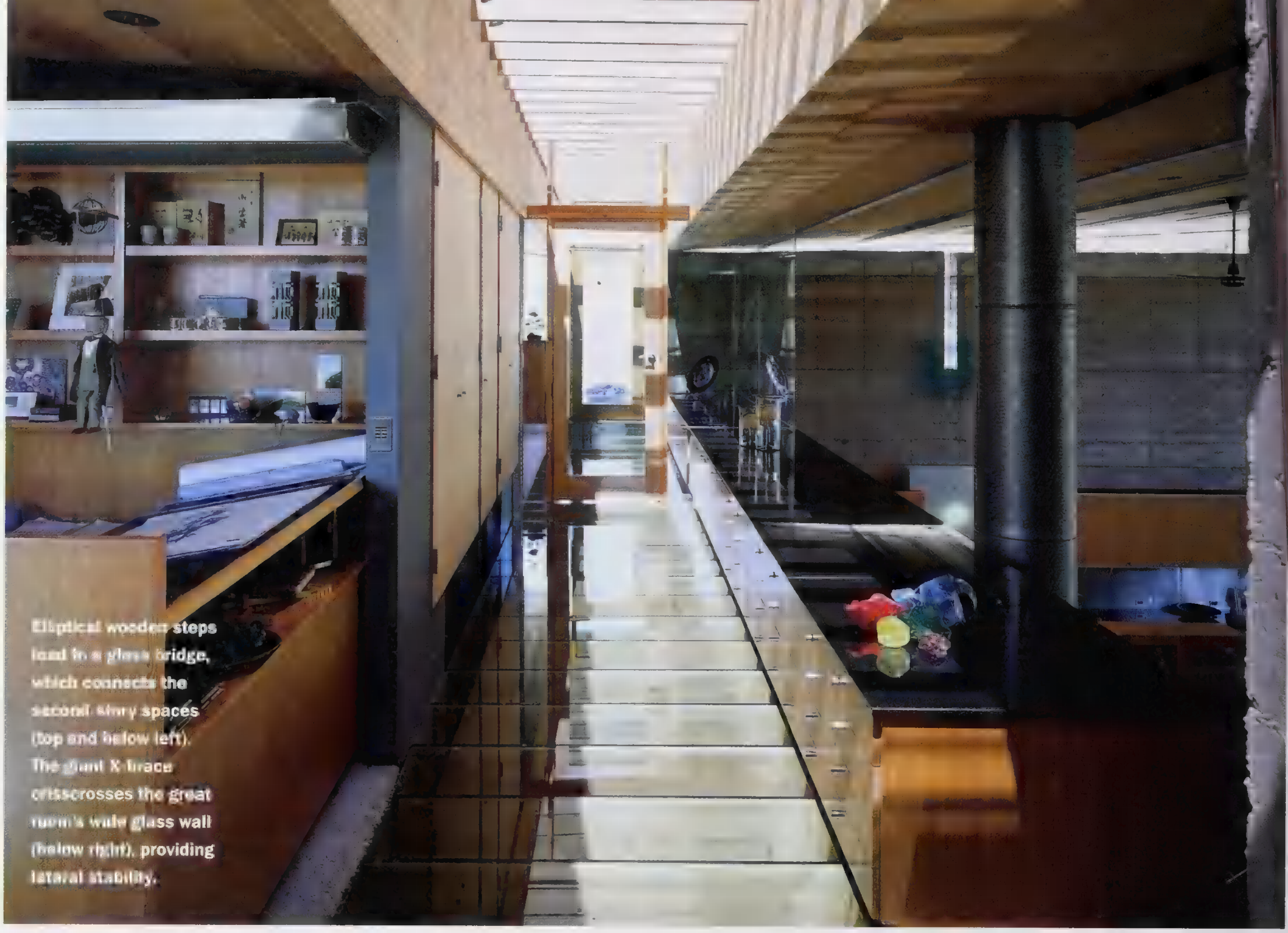
By Ingrid Whitehead

In Phoenix, where pink stucco developments have sprung up like weeds in the past 10 years, Eddie Jones has designed a visionary rammed-earth home—an anomaly amid the sprawl, with walls that will last a thousand years—for himself and his wife. The house has also become a showpiece for Jones's design sensibilities, combining his global influences, his love for the desert, his skill at creating architecture that can withstand the climatic extremes of the region, and his childhood fantasies.

"I never imagined I would live in the suburbs," says the architect. But the opportunity arose when Jones and his wife, Lisa, found a parcel of land in the midst of Phoenix's upscale Ahwatukee neighborhood. Deemed unbuildable because of its proximity to a large water-chlorination tank, the 1-acre site remained unsold, while red-tile-roofed McMansions sprang up all around. The property, however cursed by the tank, was also blessed by its direct connection to South Mountain Preserve, a 15,000-acre municipal park, complete with hiking trails and jagged desert landscape. Jones saw the potential, got the land for "a steal," and set out to design a house that would make use of the mountain vista while shielding views of the tank and other houses.

Strategic design resulted in shaping the house within cylindrical sandblasted concrete outer walls. Like entering a Mexican hacienda, you step through the front gate into a tropical courtyard with a round, elevated fountain that spills into a circular pond surrounded by lush plants.

Project: *Jones Residence*
Location: *Phoenix*
Architect: *Jones Studio—Edward M. Jones*
Interior design: *Edward M. Jones and Lisa Johnson*
Engineers: *Jack Trummer (structural); Roy Otterbain (mechanical)*
Consultants: *Bill Tonneson (landscape); Lighting Dynamics (lighting)*
General contractor: *Construction Zone*



Elliptical wooden steps lead to a glass bridge, which connects the second-story spaces (top and below left). The giant X-brace crisscrosses the great room's wide glass wall (below right), providing lateral stability.

Jones's respect for his heroes of art and architecture (Luis Barragan, Frank Lloyd Wright, Paolo Soleri, John Lautner, Al Beadle), his admiration of ancient building materials and methods, and his own experiences played a part in the house's design. Embedded in the first of the two, 2-feet-thick, raw-rammed-earth east and west walls of the residence is a stone from the chimney of Shiprock, the first home designed in Arizona by Frank Lloyd Wright, built in 1942 for Rose Pawson.

In keeping with the one-of-a-kind elements incorporated into the house, a huge oak door that Jones saved from another site leads from the courtyard into the living space. Once inside, a sparse foyer contains a unique Soleri bell. Elliptical wooden steps lead up a cylindrical turret (a nod to Jones's childhood fantasy of living in a medieval castle) to the upper spaces.

On the ground floor, a central corridor separates the two-story-high great room from the bedroom and office spaces to the south. The north-facing great room combines all public spaces in the house, including the kitchen and dining areas. The room's 18-foot-tall-by-40-foot-wide glass wall is laterally stabilized by a steel X-brace. The rammed-earth walls and steel braces serve as the structure, insulation, and finish materials; there is no need for additional materials such as drywall, other insulation, stucco, or paint. "It's a very straightforward and logical house," says Jones. "All the dirt for the walls came directly from the site, and there are

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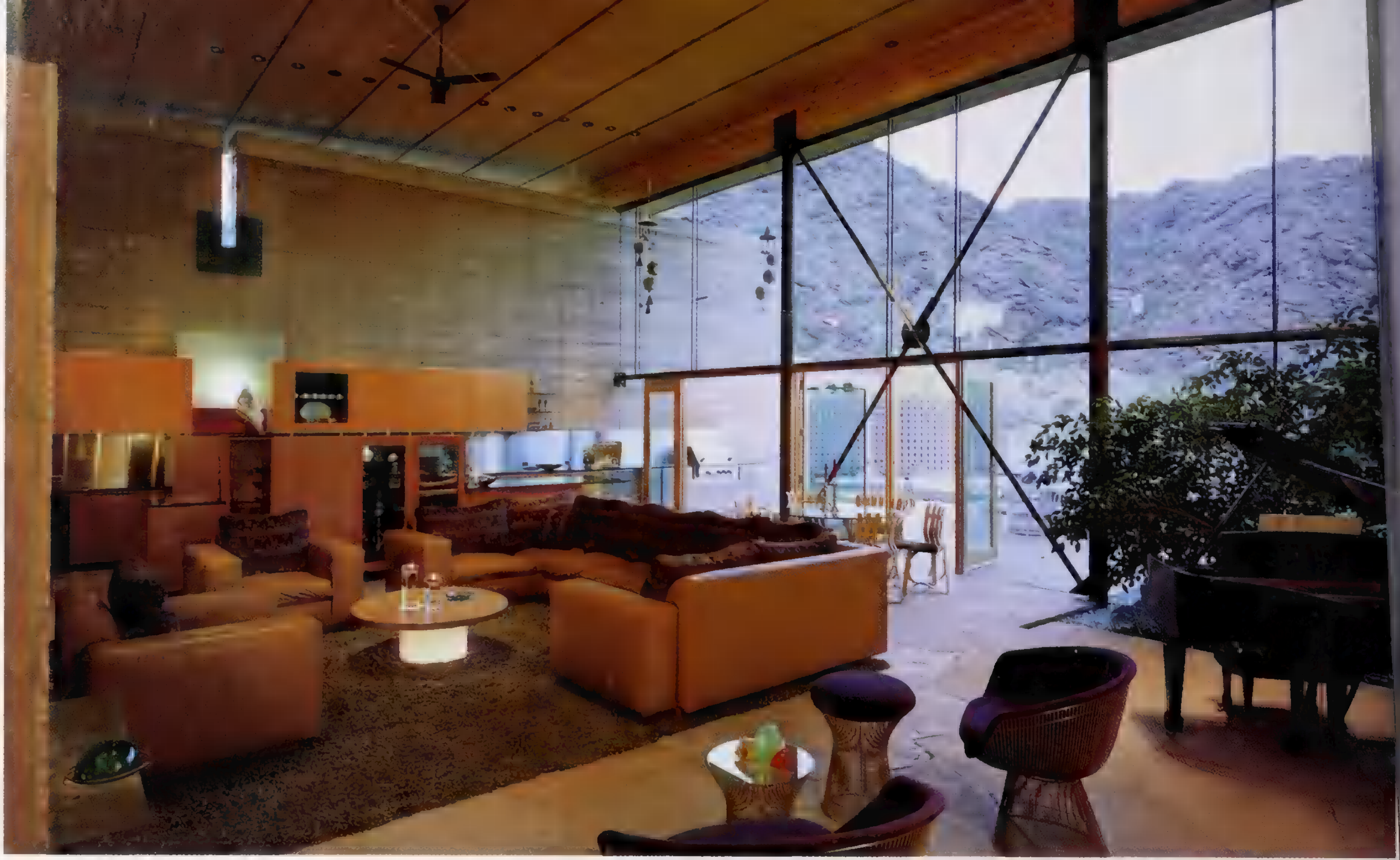
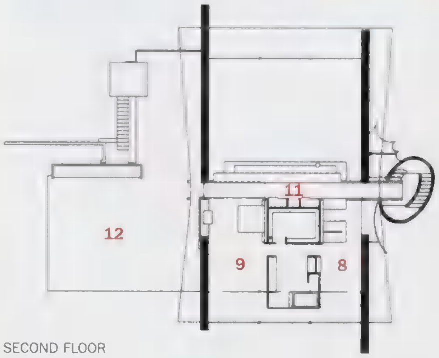
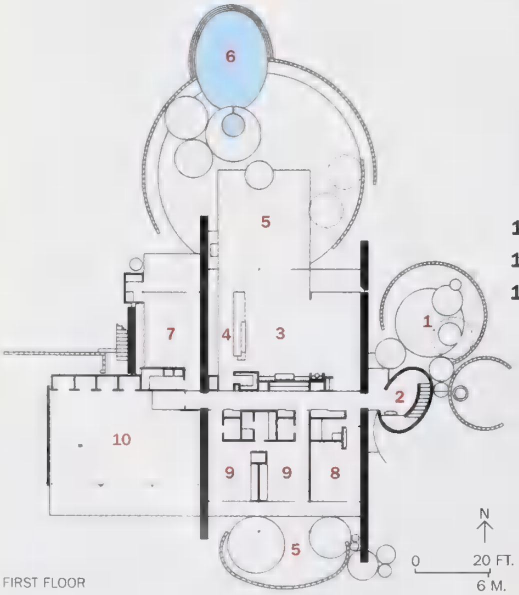




SECOND FLOOR



FIRST FLOOR

The great room combines all public spaces in the house, including the kitchen and dining area. Views of the South Mountain Preserve to the north disguise the house's suburban context.

1. *Entry patio*
2. *Stair tower*
3. *Living*
4. *Kitchen*
5. *Patio*
6. *Pool/spa*
7. *Den*
8. *Studio*
9. *Bedroom*
10. *Garage*
11. *Bridge*
12. *Roof deck*

practical reasons for each joist and joint."

An example of such practical design choices are the "pillows of light," or glass interventions that separate walls from doors, and walls from the roof. The glass opens up the house by allowing natural light to seep in at all joints. The roof provides another practical solution by sloping toward the elliptical turret and culminating in a rainwater harvesting system that serves to irrigate the home's landscaping. Although the desert is mostly hot and dry, when monsoon season comes heavy rain is directed to the desert floor by zinc-plated chain-link hung from rusted black iron steel plates on the roof facing the street side of the house.

The roof also has a skylight that runs along the entire length of the house, parallel to a 40-foot-long, clear-glass second-floor bridge, allowing natural daylight to penetrate to the rooms below. Upstairs, the master bedroom and Jones's home studio are open to the glass hallway and the great room below, providing a loftlike atmosphere.

Back down in the great room, concrete flagstones continue past the glass wall out to the patio, which offers views of the mountain preserve. An infinity-edge pool provides a welcome cool place to relax outside when the temperatures climb.

Jones says that although the neighbors were initially skeptical of the so-called "dirt house," they were also curious. Now they regularly bring guests by to see it. Jones describes one incident with his neighbors with a smile. "After the first big rain, Lisa and I went out front to watch the rain-harvesting system in action. As we watched the rain travel down the chain link, our neighbors started coming out of their houses to watch, too, and they applauded. It was a great moment, an impromptu standing ovation." ■

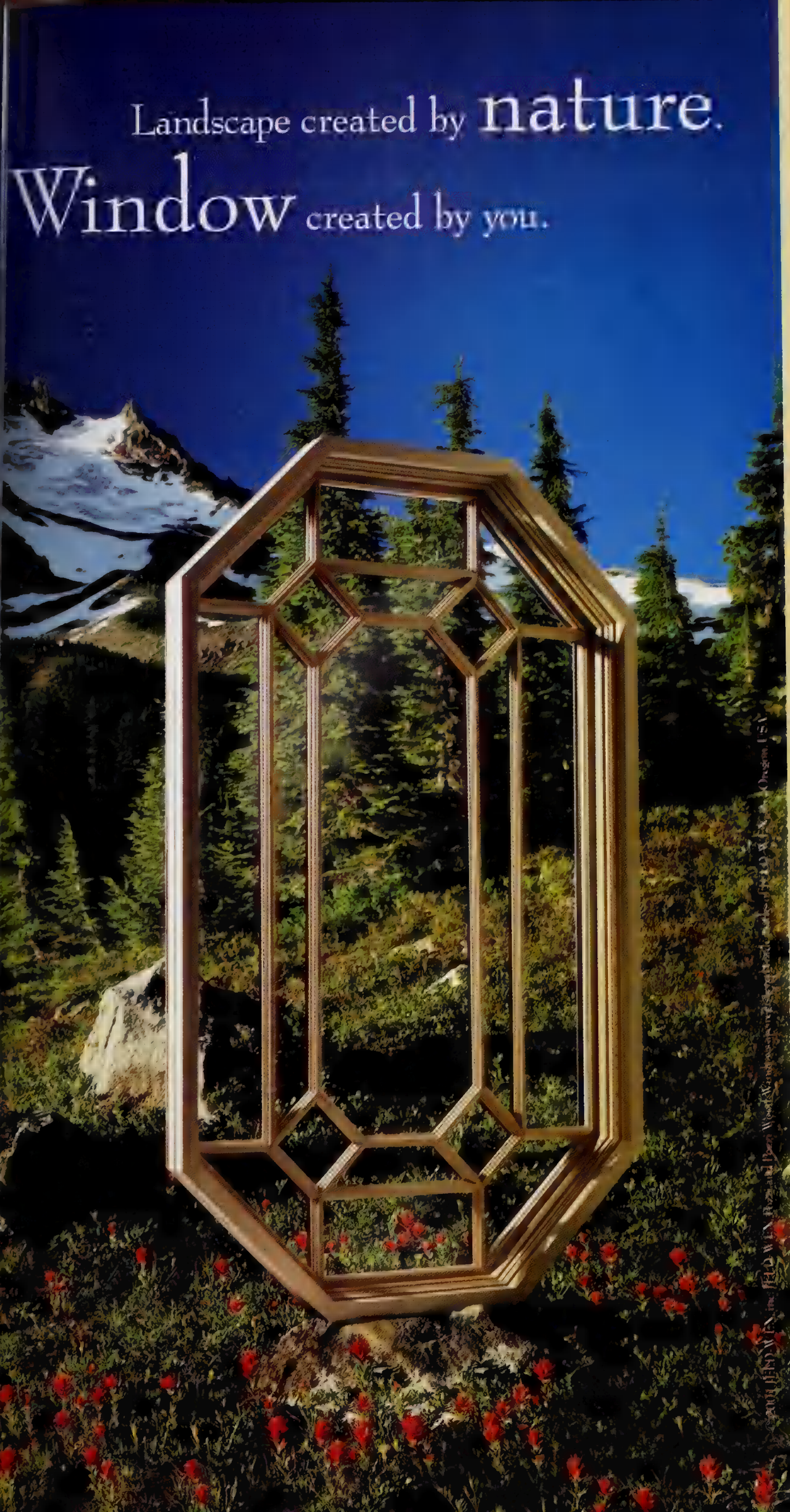
Sources

Exterior cladding: *Pioneer Masonry (masonry); Construction Zone (concrete); Ken & Todd Laurent (wood)*

Doors and entrances: *Aztec Doors*

Skylights: *Glassline*

Lighting: *Lightolier (downlights); Light Touch (controls)*



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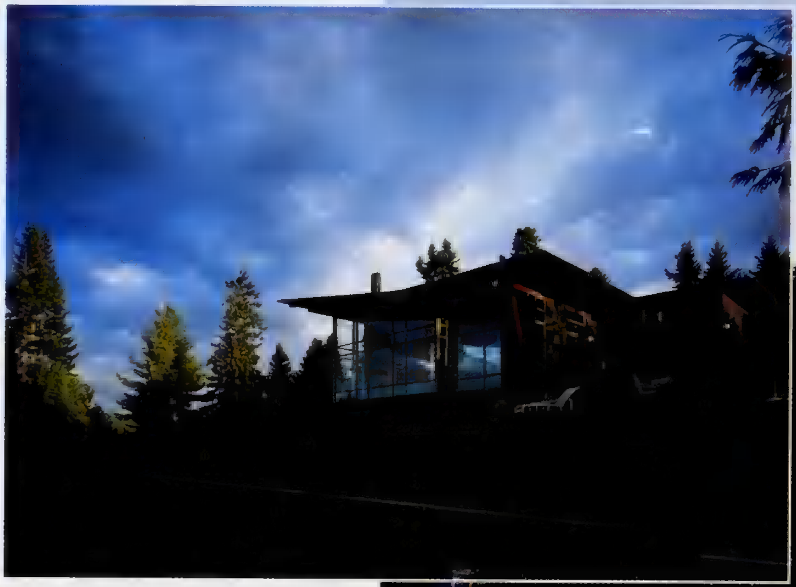
William Matthews found a warm berth in this nautical Bainbridge Island setting

By Sheri Olson, AIA

In the Pacific Northwest, responding to the climate sometimes matters as much for mental health reasons as it does for energy efficiency and weatherproofing. "It's dark and wet here for five months of the year; it can get very dreary," says William Matthews, AIA, who specializes in commercial and residential work. His new house on Bainbridge Island, Washington, uses large overhangs, lots of light, and natural materials to create a welcome shelter from the rain.

After the birth of their second child, Matthews and his wife, a construction manager, sold a Seattle house he designed in the 1980s and began looking for land to build a larger house. Bainbridge Island, a scenic 35-minute ferry ride away from Seattle's central business district, attracted them with promises of privacy, views, and deep-water moorage for the family's motor boat, kayaks, and four sailboats. After searching for years, they found a 1.8-acre property on the south shore of Madison Bay.



During construction, the family lived in an existing 1960s rambler (now demolished) on the northeast corner of the sloped site occupying most of the level area. The new house, in the southwest corner, tucks into the crown of a hill, allowing a broad lawn that terraces down toward the water 75 feet below. "The bay's varied shoreline gives it a distinct neighborhoodlike quality that I wanted to respond to," says Matthews.

The roof's simple, butterfly-wing shape nods to its neighbors, a reversal of the shed roofs of the boathouses that dot the shore. Angling the roof up on the east and west sides allows both more window area and large overhangs to protect the exterior walls from the constant dampness. Except for the roof's wood structure, all exterior materials are slate-tile and corrugated-steel siding to minimize maintenance. The exterior walls

Sheri Olson, AIA, is RECORD*'s Seattle-based contributing editor as well as the architecture columnist for the* Seattle Post-Intelligencer.

Project: *Matthews, Farwell Residence*
Location: *Bainbridge Island, Wash.*
Owner: *William Matthews, AIA, Robin Farwell*
Architect: *Matthews Architects—William Matthews, AIA, Jim Nakata, project team*
Structural engineer: *Swenson Say Fagét—Gary MacKenzie, principal*
General contractor: *Fisher Construction*
Consultants: *Mary Jane Rehm (color consultant); Berger Partnership (landscape architect)*

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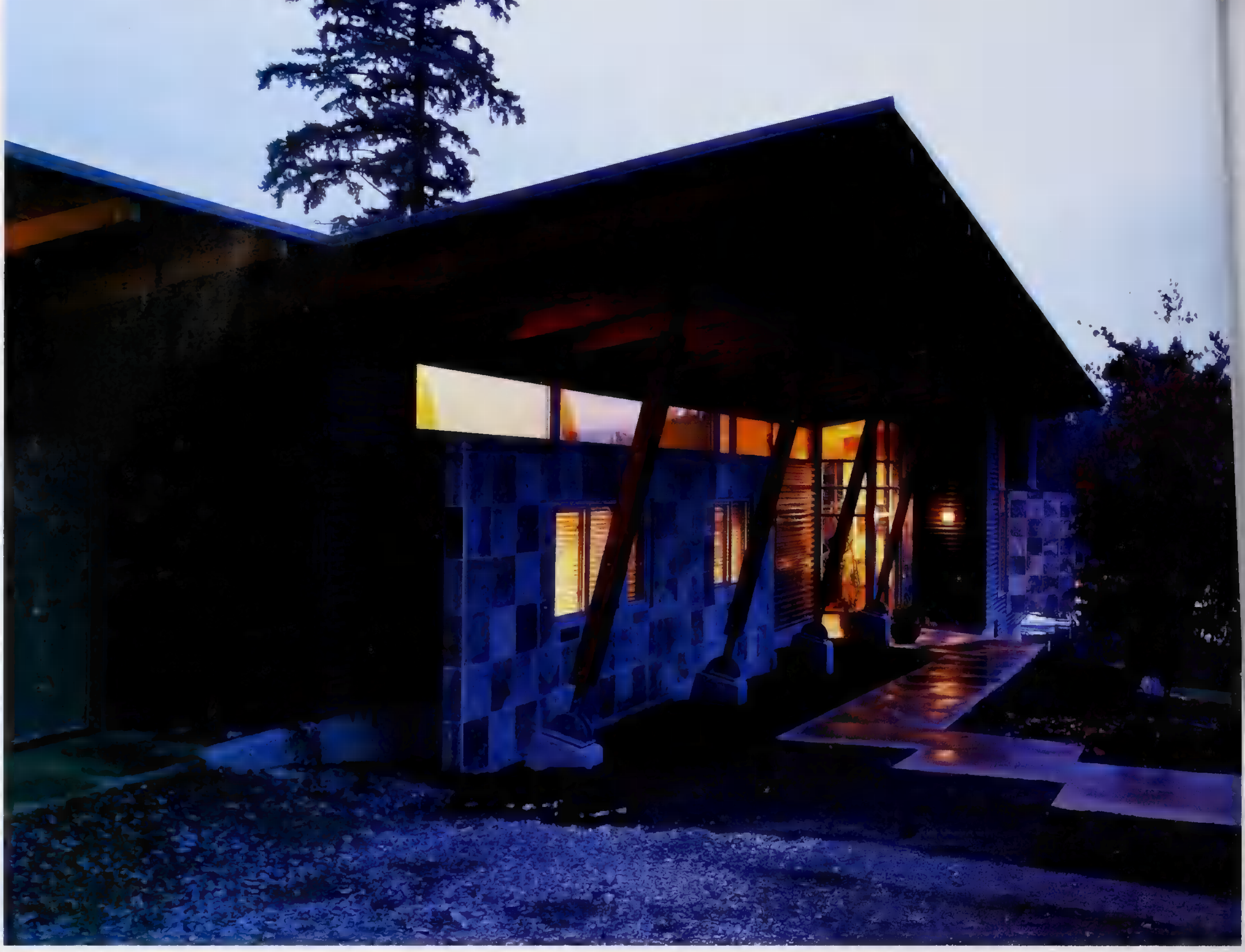
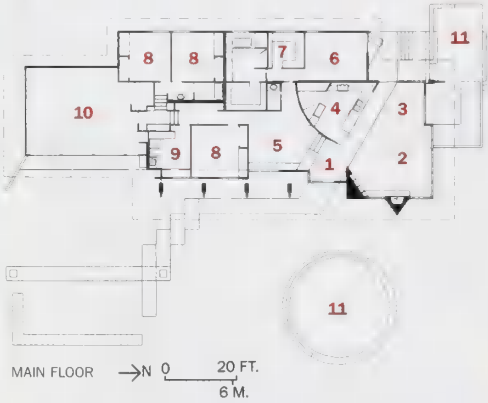
Bainbridge Island, a scenic 35-minute ferry ride away from Seattle, attracted the Matthews family with promises of privacy, views, and deep-water moorage for their small fleet of boats.





1. *Entry*
2. *Living*
3. *Dining*
4. *Kitchen*
5. *Den*
6. *Master bedroom*
7. *Study/office*
8. *Bedroom*
9. *Laundry*
10. *Garage*
11. *Terrace*

At the entry, a series of wood and steel struts support a 14-foot overhang, creating a generous porch along the east side. Slate-tile and corrugated-steel siding minimizes maintenance (above and below).

jog in and out under the overriding roof to suggest different volumes inside. At the entry, a series of wood and steel struts reach out to support a 14-foot overhang, creating a generous front porch.

Inside, the roof floats over a ground plane that follows the hill as it steps down 18 feet along the 120-foot length of the house toward the water. This progression creates a variety of scales and spaces under a continuous ceiling plane. The largest, an open living and dining area at the north end of the house, faces the bay. The window wall is a commercial storefront system with steel reinforcement to allow a thinner mullion size appropriate to residential scale. The few sections of wall not constituted of floor-to-ceiling glass contain saturated paint colors, from plum to pumpkin, that provide an antidote to the cool blue light outside.

The kitchen is physically and metaphorically the heart of the house. "We live very informally and everyone hangs out in the kitchen," says Matthews. Landlocked and without exterior walls or windows, the kitchen forms part of the large living/dining space, sharing the light and views. Cabinets join as part of an L-shaped piece of built-in furniture that sits as a self-contained unit. A slim disk of wood ceiling floats over the kitchen to further differentiate it in the loftlike space.

The house appears larger than its 3,200 square feet because of the shared open space, built-in

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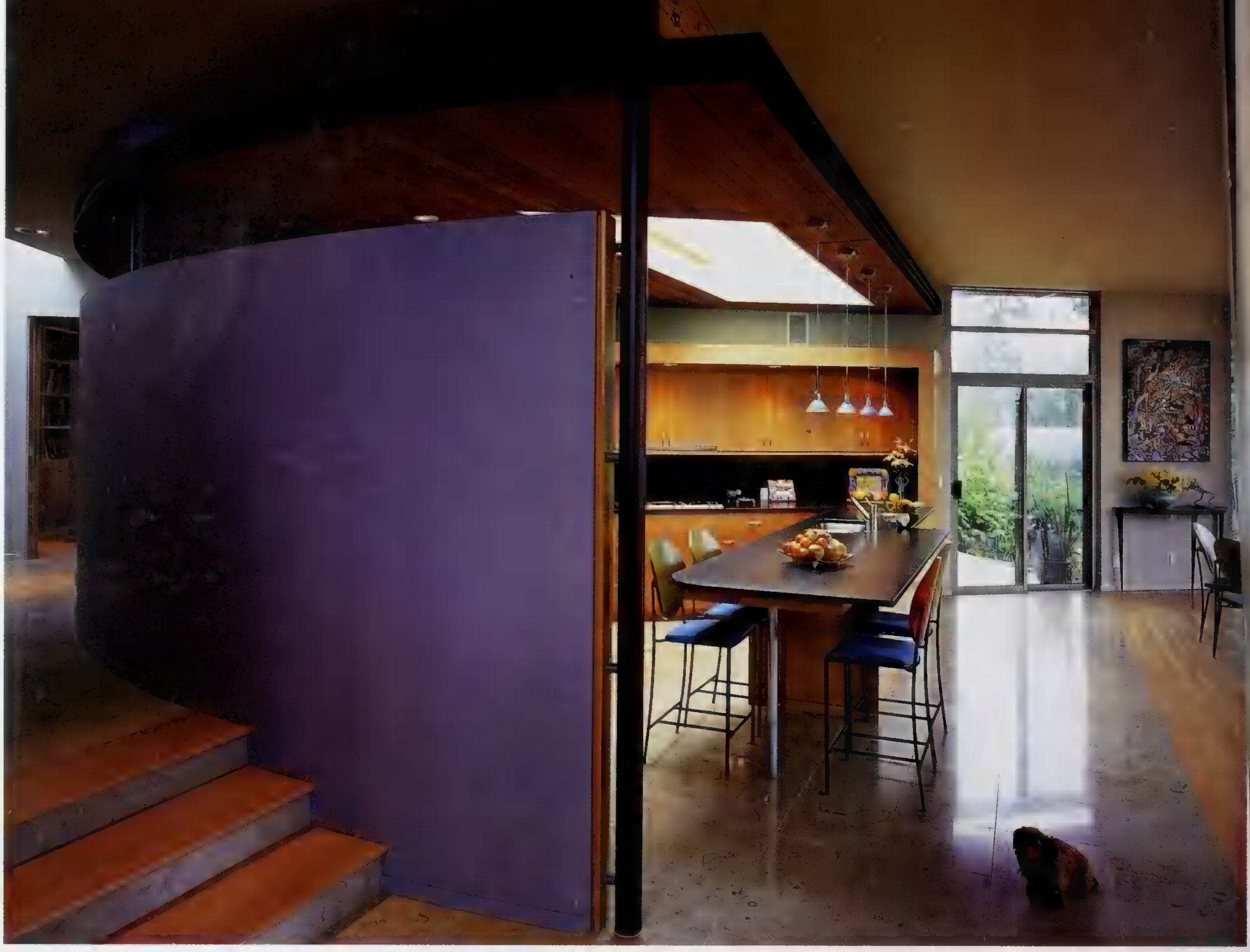

Skylights are adjacent to walls so that the lights seem to disappear up into the ceiling while bouncing ample natural light throughout the house. The main living spaces are on one level, with a few steps up to the master bedroom and den.

furniture, and a few simple visual tricks. "If you let wall planes slide past at corners and edges, the interior feels more expansive," says Matthews. Skylights throughout the house adjoin walls so that the lights seem to disappear up into the ceiling while bouncing enough natural light inside for even the grayest days.

With an eye toward the immediate future as well as the prospect of aging-in-place for the owners, the main living spaces occupy one level, with a few steps up to the master bedroom and den. The kids' bedrooms reside at the back of the house. When the children are of an age to leave for college, the house will remain cozy and will not feel too big and empty. For now, it's full—graciously accommodating kids, friends, and pets without being dogmatic about design. "We didn't want to sacrifice livability to make a grand architectural statement," says Matthews of his warm berth in the winter storms. ■

Sources

Metal/glass curtain wall: *Kawneer*

Concrete: *Davis*

Exterior cladding: *Kawneer*

Roofing: *John Mansville (PVC)*

Sliding doors: *Millguard*

Hardware pulls: *Hewi*

Cabinetwork and custom woodwork: *Petric Custom Cabinets*

Chairs (bar and dining): *Dakota Jackson*

Downlights (recessed): *Juno*

Paints and stains: *Benjamin Moore*

Carpet: *Godfrey Hirst*

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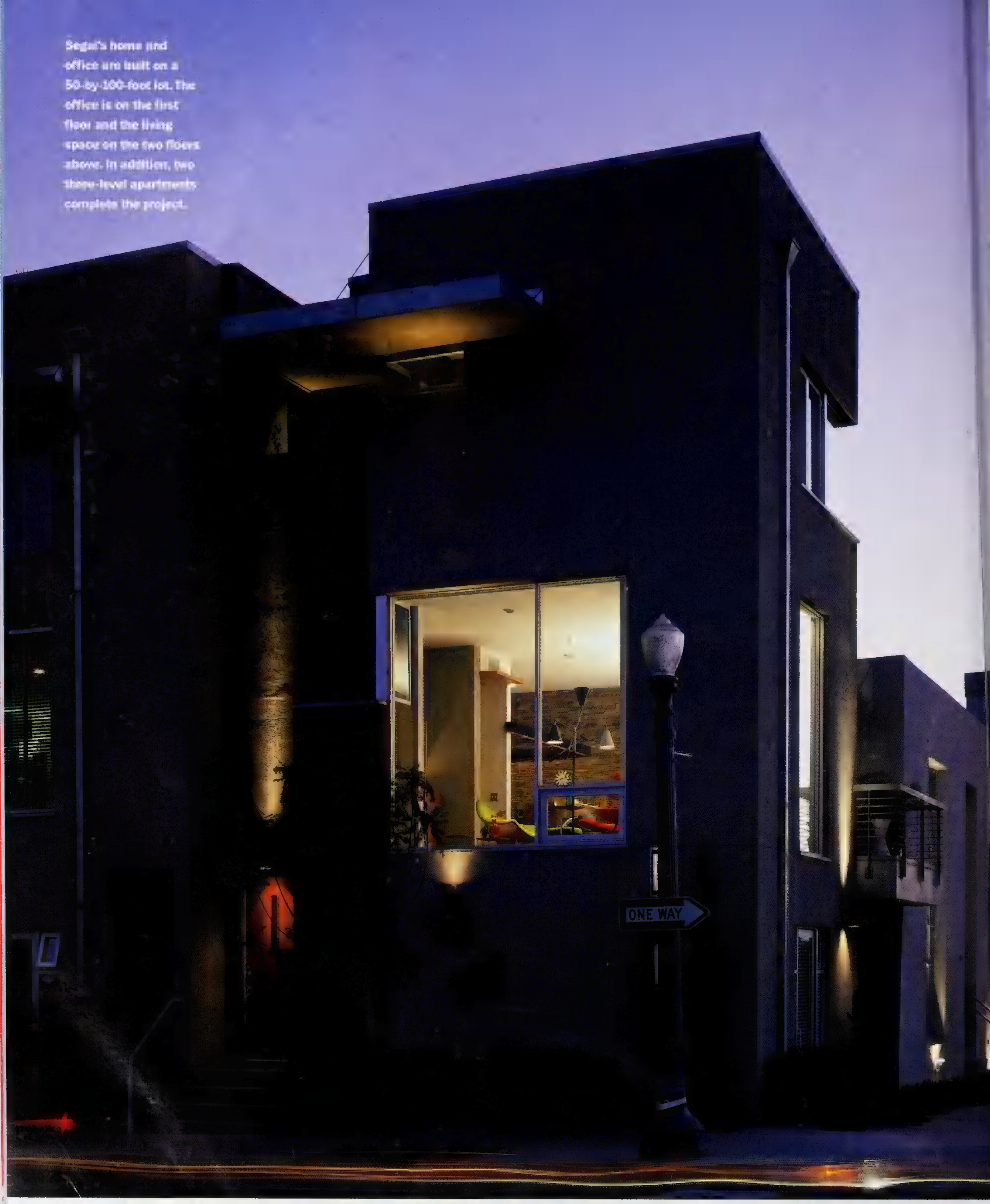


Segal's home and office are built on a 50-by-100-foot lot. The office is on the first floor and the living space on the two floors above. In addition, two three-level apartments complete the project.

Sited on urban infill, **Jonathan Segal's** residence fares well in rough-and-tumble downtown San Diego

By Kay Kaiser

San Diego architect Jonathan Segal has not had a client other than himself in 12 years. But he's not complaining. Acting as his own client, design architect, developer, project manager, construction manager, and property manager, Segal has built 16 multifamily/office projects in the rapidly redeveloping downtown area of the city. He still owns eight of them and collects rent from 150 units.

But do not dismiss this architect as merely someone who knows how to work all aspects of the building game and still have pocket money left over for a good cigar at the end of the day. In fact, Segal has brought distinctive architecture to a previously blighted area, called Little Italy [RECORD, March 1999, page 80], just outside San Diego's downtown core. Because he has been so successful at buying and building on small "leftover" lots, his signature is all over the streets that lead toward the harbor.

Segal's signature is distinctly Modern. It's spare. Urban. It's amazing that any of it is in San Diego, with previously one of the country's most provincial downtowns. But people are catching on to the value of flexible live/work spaces close to the amenities at the heart of the city. Although most of Segal's projects are four stories or less, they command more attention than the larger, glass-skinned office buildings from the late 1980s that are their neighbors.

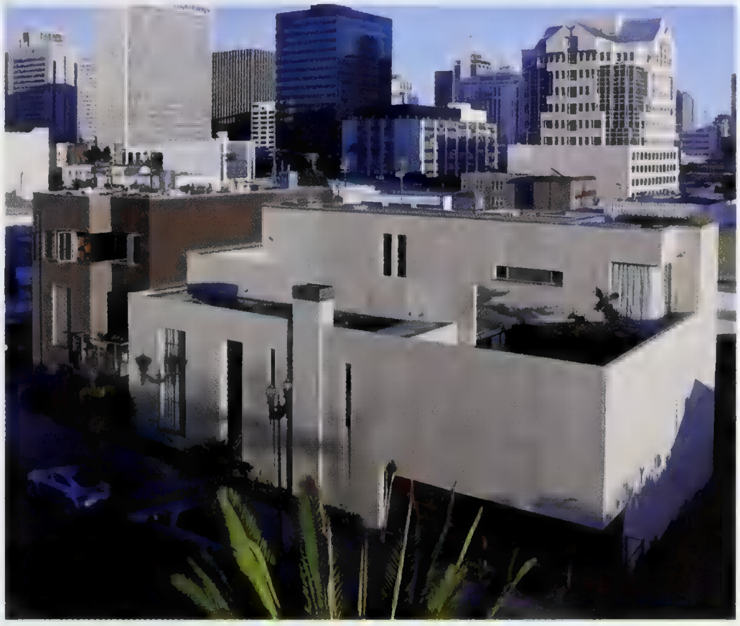
His latest downtown project is his own home and office built on a 50-by-100-foot lot, with an office on the first floor and living space on the two floors above. Two three-level apartments complete the project and help to pay the mortgage. Segal's idea was to create convertible living environments in which portions of each home could be sectioned off as rental, office, or loft space as needs change.

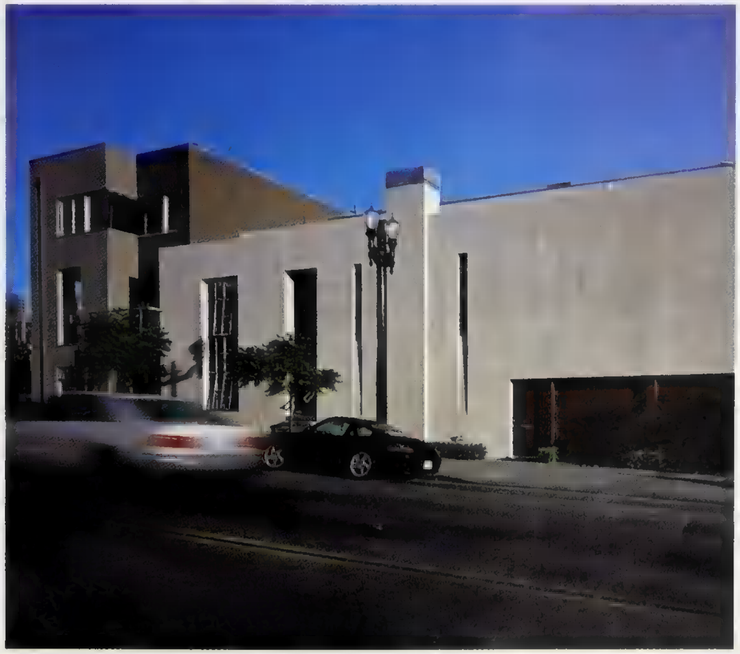
High and largely unpunctuated walls rise right out of the sidewalk; raw steel garage doors protect the cars. But look closely and you see the tops of trees on the roof. The apartments and the Segal family home have completely private gardens on the top. He refers to the project as an experiment in courtyard living, a twist in which courtyards rise up in the air, screened from prying eyes. This wise decision separates the residents from the sometimes rough-and-tumble life on the urban ground plane.

The light and design refinement surprises us in the architect's own home. The main living level is organized around the two outdoor courtyard spaces. Window walls separating indoors and outdoors open and close seamlessly, and natural light is balanced by frosted glass on the south side. This glass also hides views of the mechanical equipment on the roof of the industrial building next door. The open plan of the house allows for entertaining large groups, along with the private spaces a family of four requires.

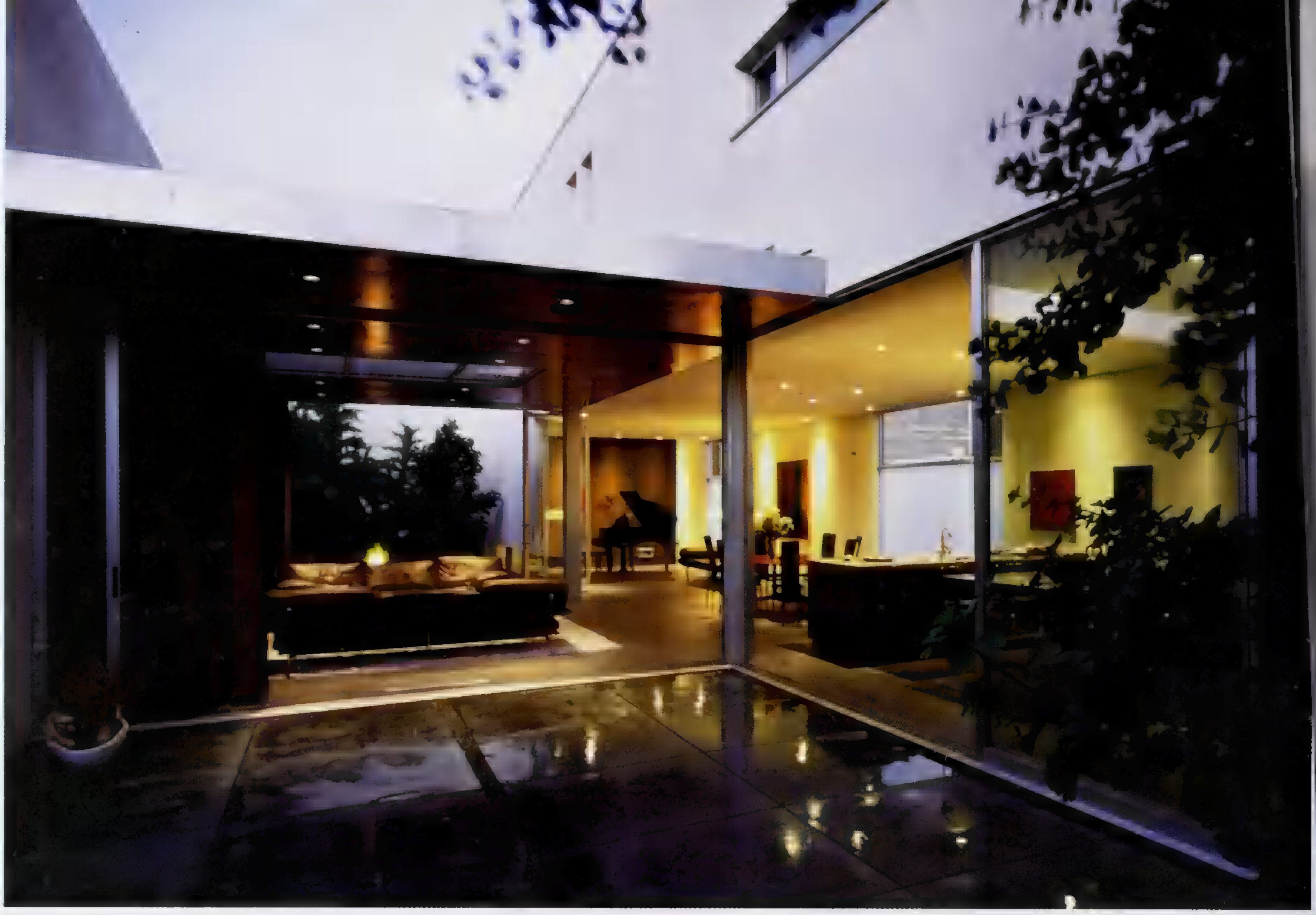
Floors are waxed and polished concrete; ceilings and fireplace fronts are lined with Sappeli wood, an exotic variety of mahogany. Segal splurged in his own house by hiring one of San Diego's best cabinetmakers, Michael Borrelli, to build integrated units to hide all the stuff two

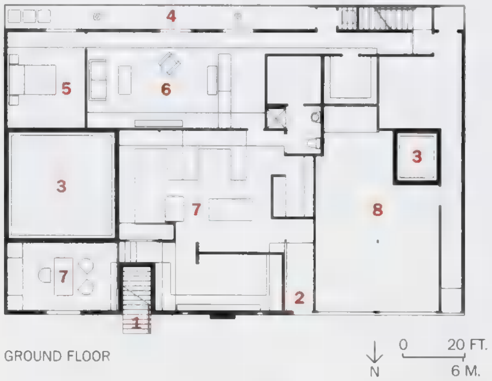
Kay Kaiser worked for 12 years as the architecture critic for The San Diego Union-Tribune. *She has published numerous books and continues to write about architecture.*



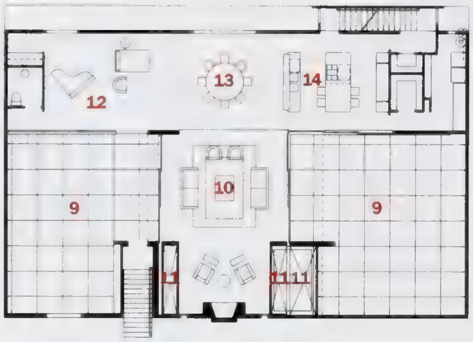


Project: *The State*
Location: *San Diego*
Owner: *Jonathan Segal*
Architect: *Jonathan Segal, AIA, Wendy Segal*
Collaborating architects: *Sebastian Mariscal, Andrew Duncan*
Landscape architect: *Spurlock Porrier*
Interior design: *Jonathan Segal*
General contractor: *Jonathan Segal*





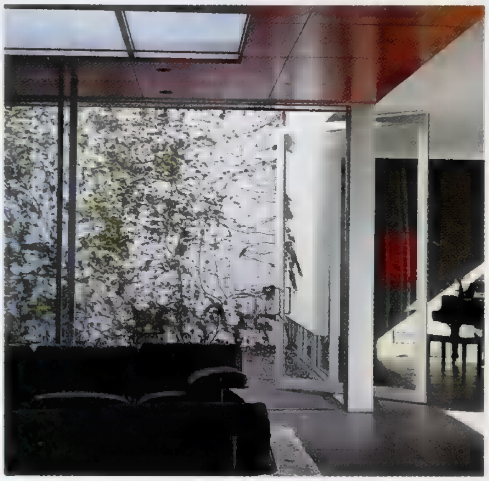
GROUND FLOOR



SECOND FLOOR

1. *House entry*
2. *Office entry*
3. *Garage*
4. *Outdoor area*
5. *Rear yard*
6. *Guest room*
7. *Game room*
8. *Office*
9. *Courtyard*
10. *Living*
11. *Skylight to below*
12. *Music*
13. *Dining*
14. *Kitchen*

The main living level is organized around two outdoor courtyards. Window walls separating indoors and outdoors open and close seamlessly.



children and their parents accumulate in a house.

The building recalls Richard Neutra, who could have had his hands all over this inventive California house, except that Segal's wife and partner, Wendy, makes dinner in an open kitchen. Rather than being separated off, she can talk to her family while she's cooking and managing the Segal properties. The Neutra reference regarding his work delights Jonathan Segal. He knows he's working his way into a new and purely California housing vernacular. It pleases him to hear passersby on the sidewalk say that his house and office is a remodel of an automotive repair shop. "Yes," he says, "downtown is the place where the rubber meets the road."

He is already mentoring other San Diego architects on how to design and build their own properties and become their own best clients. No more presentations of three schemes for everything. Arguments over details remain largely in your own head, he says. It cuts down on paperwork and phone calls. Design gets better because the architect is in control

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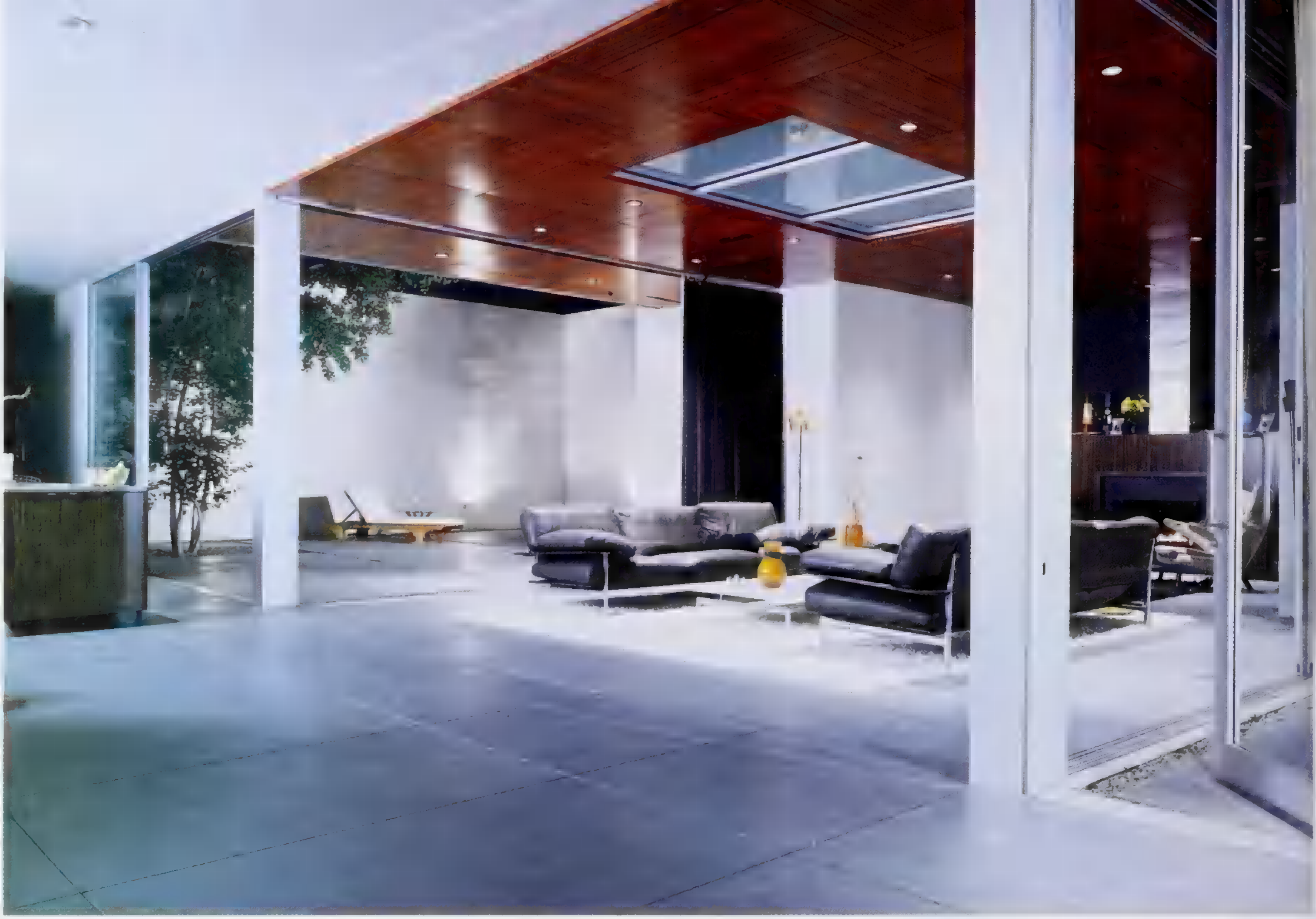
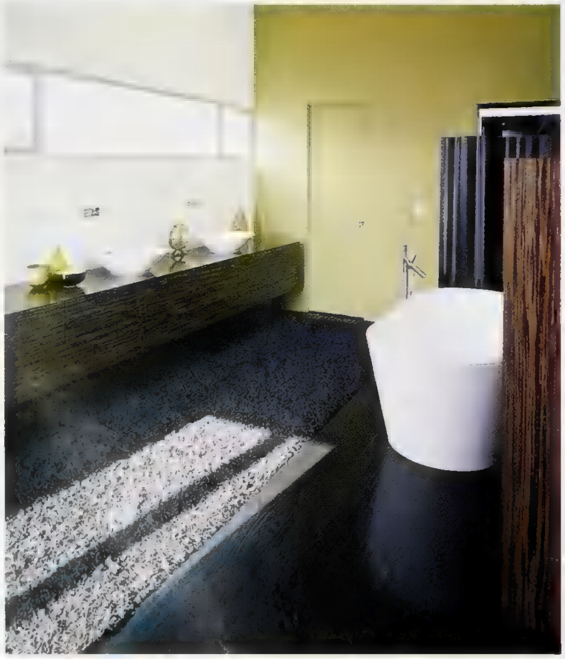


Floors are waxed and polished concrete. The ceilings and fireplace are lined with Sappeli wood, an exotic variety of mahogany (above). The master bedroom features a bathroom with ebony wood floors and a modern tub and sink hidden behind a dividing half-wall (below).



of everything. Less stress. And money left over at the end of the day. Architect Segal jumped into the neighborhood of Little Italy at just the right time in the 1990s. The cost of land was low, and city officials were happy to see a good architect and his plans for the area. Other architects in San Diego admire Segal for bringing sensible modern design downtown.

Now, thanks in part to Segal's participation, the small developer can't afford to build in this area. Neither can Segal. But Little Italy is thriving. People like living in the heart of the city, enjoy the chic restaurants and shops, and recognize that San Diego's core has new life.

The neighborhood mix also includes some of the original Italian families that founded the area more than a century ago. The Segal children have adopted a few of those people as surrogate grandparents. The churches, schools, and stores selling imported cheese and prosciutto are all exactly where they have always been.

Homeless people also inhabit the streets of this redeveloping area. That explains Segal's high walls. In so far as he is a major investor in the neighborhood, chances are good that he will help to solve that problem, too. No one here is complaining that a smart architect decided to make his home in Little Italy. ■

Sources

Exterior cladding: *Expo Stucco*

Roofing: *John Mansville*

Lighting fixtures: *Halo*

Dining table: *Charles and Ray Eames*

Chairs: *Hans Wegner*

Sinks, tub: *Philippe Starck*

Faucets: *Arne Jacobsen*

Windows: *Fleetwood*

Woodwork: *Michael Borrelli*

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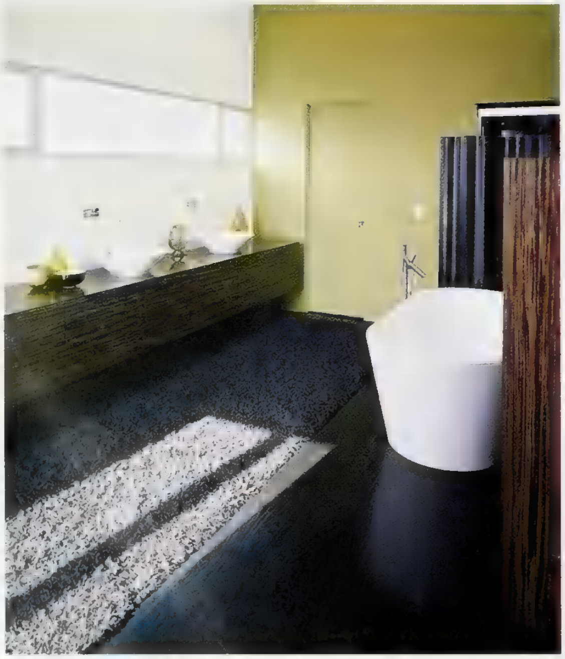

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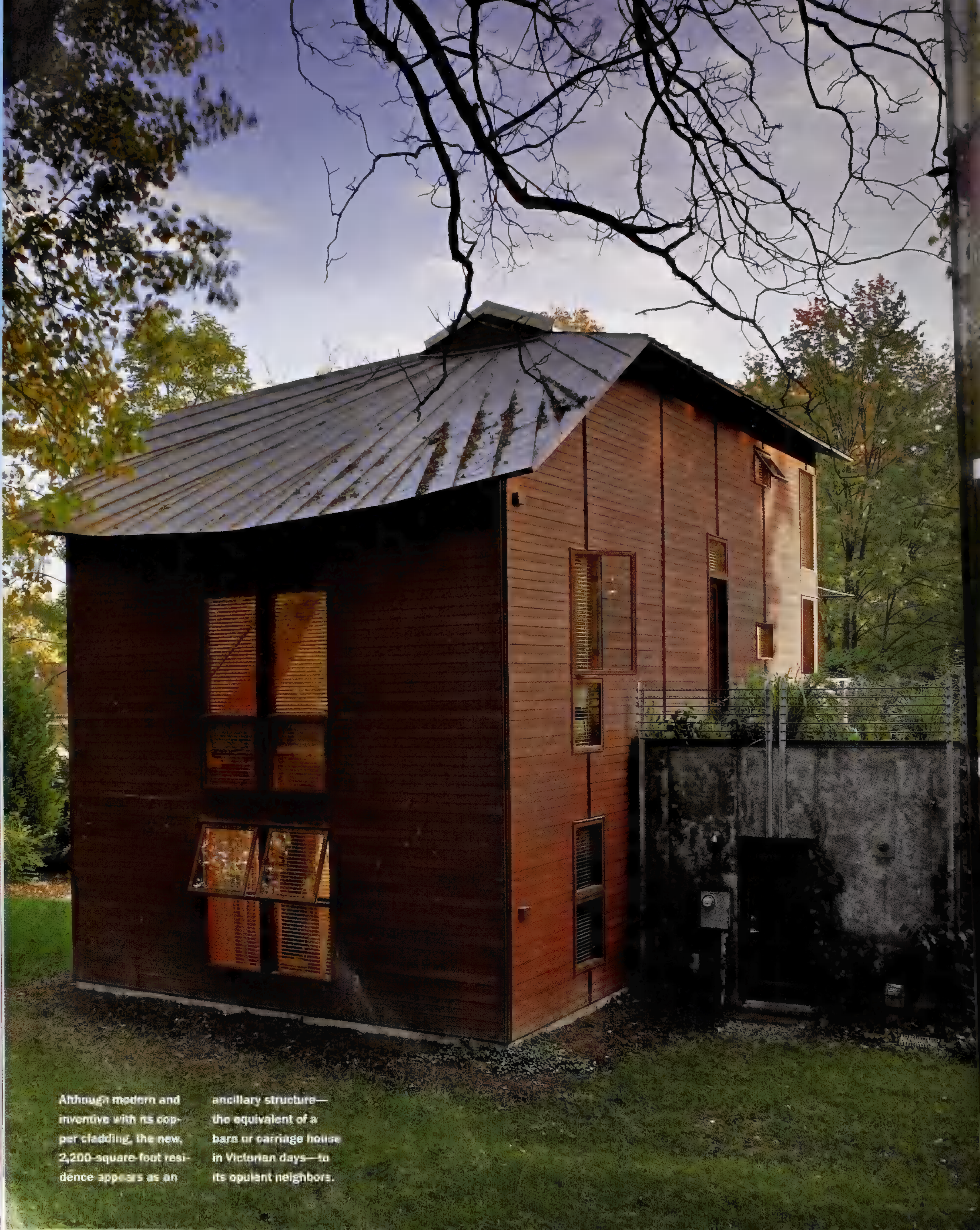
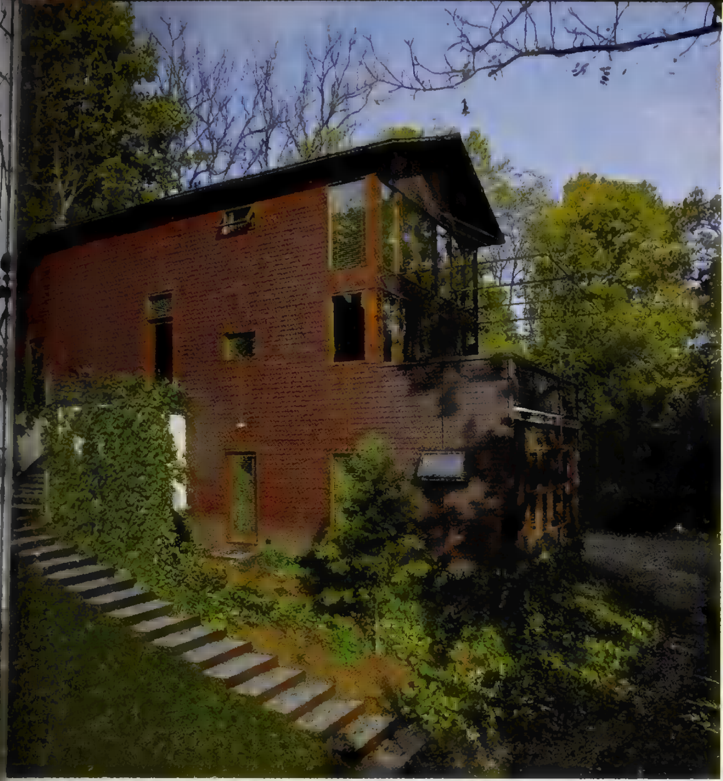


Although modern and inventive with its copper cladding, the new, 2,200-square-foot residence appears as an ancillary structure—the equivalent of a barn or carriage house in Victorian days—to its opulent neighbors.



PHOTOGRAPHY: © PRAKASH PATEL

The Burke's Timepiece

House charts passing time with precision and grace

By Nancy B. Solomon, AIA

Architects are well known for thinking in three dimensions. But how many practitioners ever give the fourth—time—its proper due? Length, width, and height, taken together, paint a static picture. But time is dynamic, defining the boundaries in which the human experience unfolds. The Timepiece House in Charlottesville, Virginia, demonstrates the architectural vibrancy that can be achieved when designers contemplate the many facets of time.

Set in a historic district, the site required that the designers first contend with historical time. How should a new structure engage with the grand Victorian homes that distinguish the neighborhood? "Respectful but pushing the limits," says Kevin Burke, the owner and codesigner of the house, of his approach to the time differential. The architects wanted to acknowledge but not replicate the bygone era. The massing of the much smaller Burke home is equivalent to a single bay of its opulent neighbors. If seen from the street, the new, 2,200-square-foot residence appears as an ancillary structure—the equivalent of a barn or carriage house in Victorian days—rather than incongruously squeezed in like an uninvited guest.

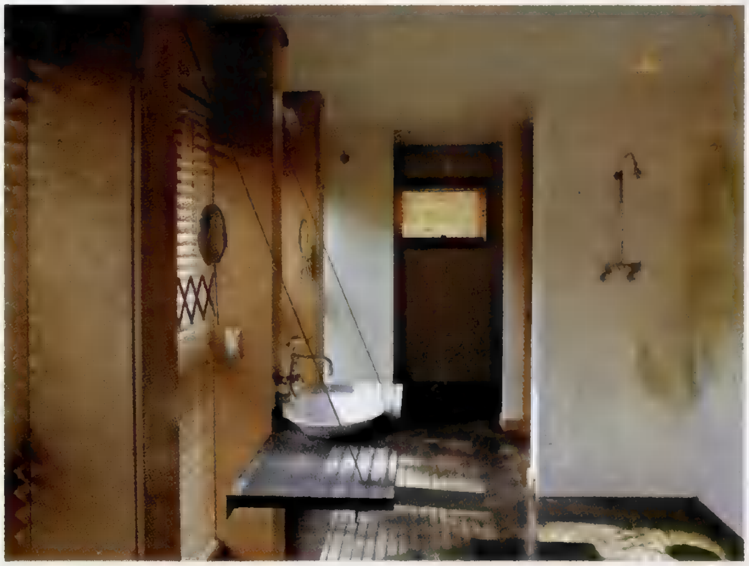
And its custom-designed copper cladding, although fitting for a background building, is modern and inventive. The passage of time will become evident as this new house slowly matures: Its copper skin, now a deep wine color, will gradually form a green patina.

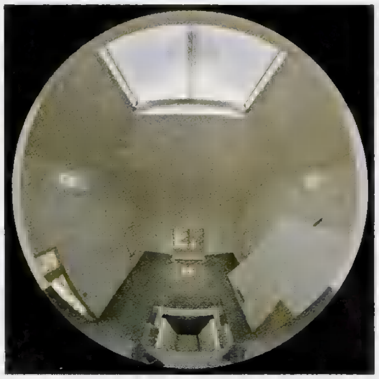
Cosmological time, experienced on earth through the ebb and flow of the day and the seasons, strongly influenced the programming and design of the house itself. This kind of time is most viscerally experienced through the intensity and angles of light. Sunlight became the architects' sculpting tool, informing the placement of elements and the shape of spaces so that the architecture could celebrate the varied movements of this cyclical dance.

To achieve the most diverse lighting experiences, Burke and his wife and partner, Carrie Meinberg Burke, oriented the rectangular floor plan along the true solar north-south axis. Service entrance, laundry facilities, and sleeping quarters, which are well suited to a cooler, darker environment, are tucked away on the ground floor. A mechanical room projects out from the west side on grade. Covered by a green roof, this concrete extension forms the formal entry porch and kitchen garden at

Contributing editor Nancy B. Solomon, AIA, writes about architecture and building technology.

Project: *Timepiece House*
Location: *Charlottesville, Va.*
Owner: *Carrie Meinberg Burke, Kevin Thomas Burke*
Architects: *Carrie Meinberg Burke Architecture + Kevin Thomas Burke, AIA*
Engineers: *W. David Winitzky, AIA (structural); Galen Staengl, Bob Somers (mechanical)*
Consultants: *Fred McGann (landscape); Dave Simpson (easement); Pete and Mary Meinberg, Susan McGinnis (advisers); Marla Ziegler (historian/friend/neighbor); Cathy Womack (attorney)*





The bathroom, which is below the kitchen/dining area on the main floor (above) is intended as an extension to the conservatory metaphor. The oculus lens strikes predetermined parts of the house (left).

the next level. The main floor is divided into a kitchen and dining a and outdoor terrace on the south end and a double-height living area the north end. Finally, like a playhouse perched in the trees, the archit ture studio on the mezzanine floor basks in abundant views and sunlig

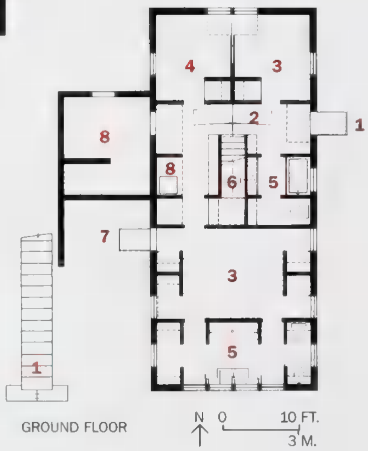
The architects designed three significant sources of natural lig for the home: a double-height window wall on the south, a skylight in t center, and an oculus to the north of the skylight. Light pours through t glazing on the south end, brightening the studio space on the mezzani the kitchen and dining area on the main floor, and the master bathroo at grade. A more diffuse light enters via the skylight. But the main sho comes from the oculus: At particular times of day and certain days of th year, a light beam emanating from this lens strikes predetermined parts the observatory. On a sunny day, one can track the light beam along th walls, ceiling, and floor of this space as the sun traverses the sky from su rise to sunset. And throughout the year, one can witness the changin angles of the sun within the room.

Not surprisingly, achieving this sundial effect required precis design and construction. Carrie Burke obtained the most accurat latitude and longitude coordinates of the site from the City o Charlottesville's building department. To ensure that the foundatio would parallel true solar north-south, the surveyor fitted the transit, o measuring instrument, with a special lens that tracked the exact time and position of the sun relative to the site. And, as general contractor, Carrie spent considerable time showing the foundation subcontractor how light penetrated the ¼-inch basswood model, all the while impressing upon him the fact that the project's ultimate success rested squarely on the accuracy of his concrete pour.

In addition, by plugging the site's coordinates and the date of the winter solstice into a Web-based calculation engine (www.susdesign.com/sunangle), Carrie determined the desired slope (corresponding to sun altitude) and skew (corresponding to sun azimuth) of each of the splayed roof beams in the living area. These beams were to span from bearing brackets in a steel roof truss near the oculus downward to the northern exterior wall. She gave these dimensions to the structural consultant, who then produced full-scale CAD drawings of the truss. The CAD drawings became the template for the truss fabricator. With a calculator and trigonometric equations she developed during graduate school, Carrie converted radial geometry to orthogonal geometry so she could locate the proper position of each beam on the exterior wall.

Although clearly enthralled by this poetry of light, the architects did not overlook the more mundane aspects of time. Realizing, for example, that their physical needs may change over the years, they framed the house so an elevator could easily be installed in the future. The interior spaces are designed and furnished with maximum flexibility so that the rooms can transform as different functional needs arise. And, whenever possible, the architects specified low-maintenance materials to maximize their own time to enjoy their friends, family, and dynamic home. ■

1. *Entries*
2. *Solstice, noon*
3. *Bedrooms*
4. *Study/guest room*
5. *Baths*
6. *Stair*
7. *Garden room*
8. *Service areas*



Sources
Structural system: *Trussjoist MacMillan; Better Living Building Supply*
Exterior cladding: *Advanced Concrete; Allied Concrete*
Roofing: *Martin Roofing; American Hydrotech (green roof system)*
Windows: *Willmar*
Glazing: *Virginia Glass; Wasco (skylights)*
Hardware: *Schlage*
Interior finishes: *Jack Kavana (kitchen and bath cabinets)*
Furnishings: *Design Within Reach*
Upholstery: *Atlantic Futon*

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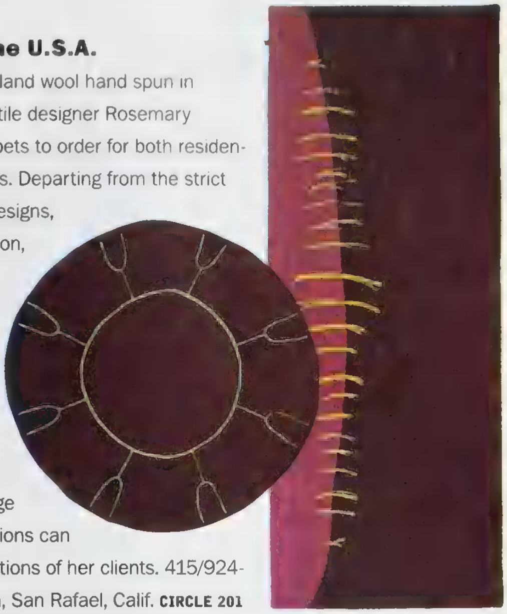

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Armstrong offers a selection of hardwood flooring options, including products from Bruce, Hartco, and Robbins. Bruce specialty hardwoods are available in solid, engineered, and "floating" wood-floor constructions to accommodate installation in any room and over any subfloor, including vinyl, concrete, and ceramic tile. Robbins specializes in species such as oak, maple, pecan, walnut, and cherry in both solid and engineered floors. The finishes and species of the Pattern Plus 5000 line from Hartco spans 29 colors and five species, including the Maple series in Basil, shown above. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. **CIRCLE 209**

► Mosaic tile patio

For the renovation of their 1947 house in Tucson, architects Luis Ibarra and Teresa Rosano transformed a former entry porch into an informal patio for grilling and dining. Carter Glass Mosaic tile in Lake Blue and Meadow was used to brighten the courtyard and hide an unsightly concrete finishing job. 541/552-0855. Hakatai Enterprises, Ashland, Ore. **CIRCLE 210**

▲ Classic molding families

Based on the designs of a 1920s manufacturer's catalog, the Colonial Revival–style molding series includes a three-piece crown, picture molding, two-piece window detail, two-piece base molding, and casing. In addition to the Colonial Revival style, WindsorOne also offers the Classical Colonial, Greek Revival, and Classical Craftsman. Each style attempts to capture the historically accurate details and essence of period-style architecture with a whole-room approach. 888/229-7900. WindsorONE, Windsor, Calif. **CIRCLE 211**

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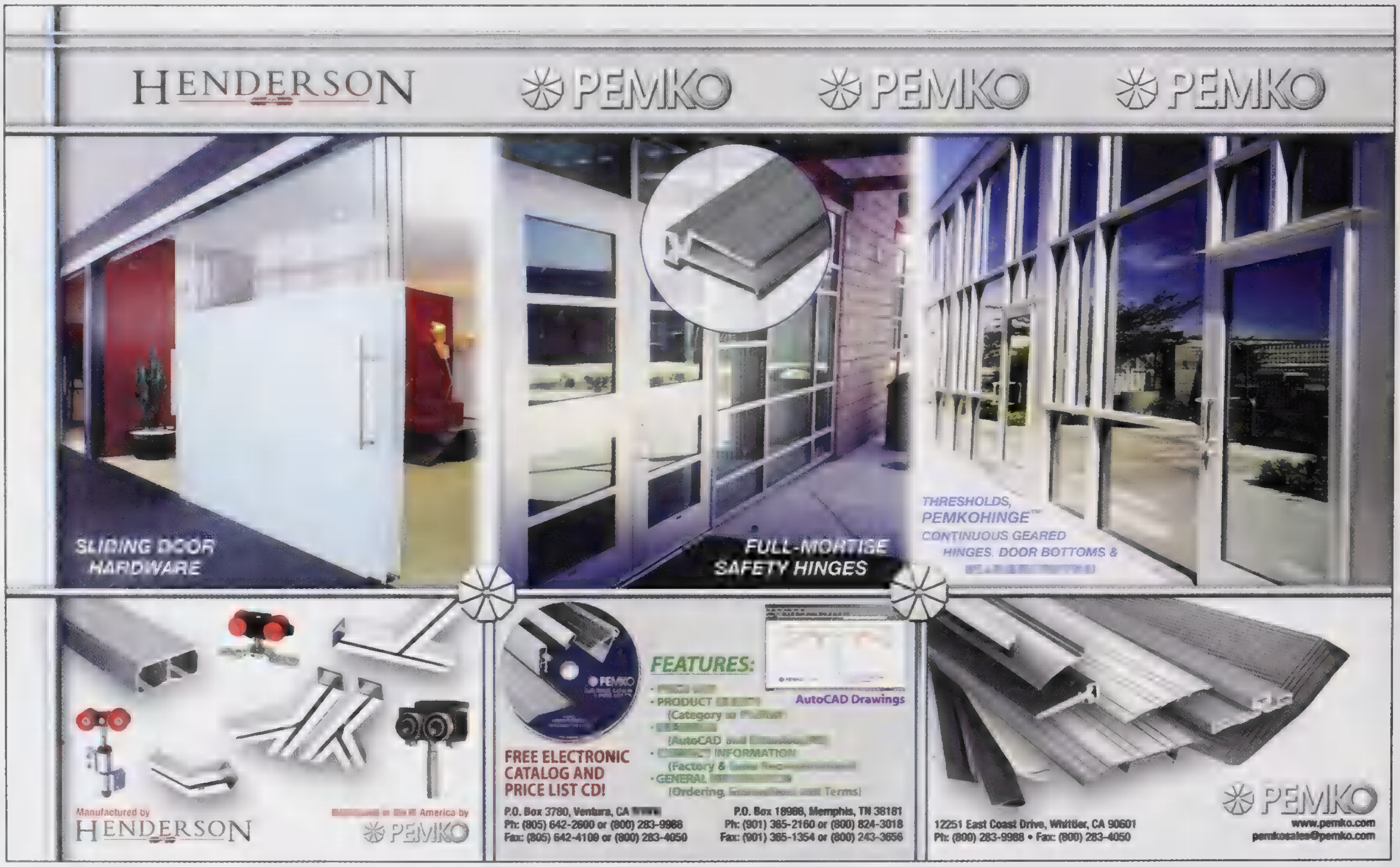
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New Products

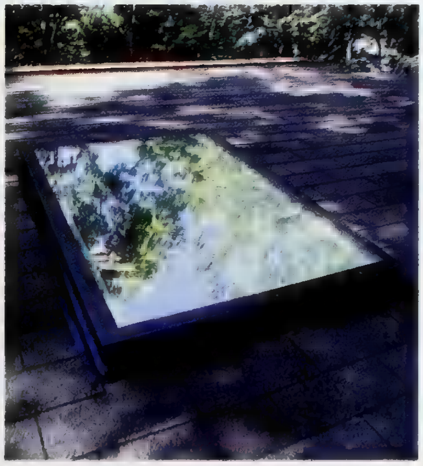
Increasing the selection of energy-efficient **window and skylight** products can be difficult, particularly in a year when the energy bill that would have provided tax incentives the use of **efficient windows** and doors was put on hold. To see the newest offerings in the category this year, check out the IBS, from 1/21 to 1/24, Las Vegas, and The Remodelers' Show, 10/23 to 10/25, Baltimore. *Rita F. Catinella*

New skylight units install easier and are available in an array of color options

Wasco Products manufactures a full line of residential skylights, including E-Class, a skylight featuring the Ultraseal Flange, a flexible, one-piece, self-flashing unit that requires no mastic. The Ultraseal System allows the E-Class skylight to install more quickly and easily than skylights that need step-flashing or mastics. The system features a primary water diverter that channels water around the skylight; four secondary channels complete the design. In addition, an integral continuous hinge (venting unit) or continuous gasket (fixed unit) seals the element from rushing water from above. The skylight's anchoring system features rustproof aluminum brackets that snap onto the skylight without tools. The E-Class units are backed by a 10-year warranty against leaks.

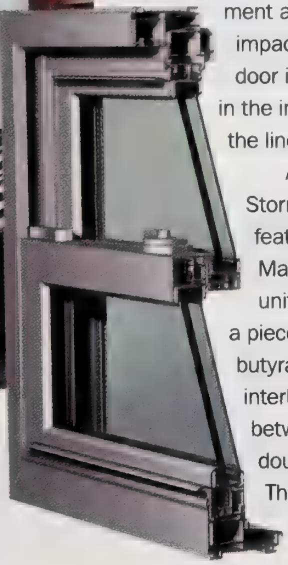
Wasco states that, compared to the leading competitor's products, the E-Class skylight delivers up to 60 percent more daylight from the same size rough opening. In addition to E-Class, Wasco offers the Architectural Series, a line of standard and custom structural units.

Wasco has recently announced the availability of architectural colors on all skylights, making it the first major U.S. skylight manufacturer to feature color as a standard offering, according to the company. Wasco's new color chart includes Bone White, Colonial White, Black, Brick Red, Colonial Gray, Sandstone, Hartford Green, Interstate Green, Aged Copper, and Quaker Bronze. The availability of these color frames, in Kynar 500 or baked enamel, allows for the seamless transition between roofing and framing materials. 800/388-0293. Wasco Products, Sanford, Maine. **CIRCLE 212**



Wasco's Architectural Series of custom and standard skylights (above). Wasco's easy-to-install E-Class Skylight (right).

Complete line of impact-resistant window products for coastal areas

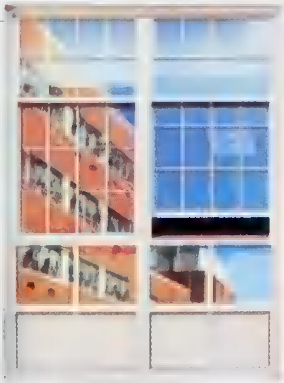


StormBreaker Plus casement window (above). Double-hung window cutaway (right).

Simonton StormBreaker Plus is an impact-resistant product line designed for high windblown coastal areas. Windows are available in double-hung tilt, casement, awning, geometric, and picture styles for both new construction and replacement applications. An impact-resistant garden door is also included in the initial offering of the line.

All products in the StormBreaker Plus line feature KeepSafe Maximum glass. The units are composed of a piece of heavy polyvinyl butyral (PVB) plastic interlayer sandwiched between two pieces of double-strength glass. The laminated glass is then combined with another piece of double-strength tempered glass to form an insulating glass unit. The unit, which has been sealed together to form a strong, impact-resistant bond, is then glazed into the sash to hold the glass in the frame.

Independent testing results show that StormBreaker Plus products meet and exceed various windborne debris standards set by the Southern Building Code Congress International, ASTM, and the Texas Department of Insurance. These results mean the line can be used in the majority of hurricane-prone areas of the United States. All StormBreaker Plus products can be ordered with Solar E glass that meets Energy Star requirements in various parts of the country. 800/SIMONTON. Simonton Windows, Parkersburg, W.Va. **CIRCLE 213**



Historic aluminum single-hung window

The 2275H aluminum single-hung is an option for historic buildings, including college and university facilities. The window emulates original wood double-hungs, right down to the integral beveled sash with equal sash sightlines. Applied triple-grid muntins simulate true divided lites. A 1" insulated glazing system with low-e coating is an option. 717/849-8100. Graham Architectural Products, York, Pa. **CIRCLE 214**

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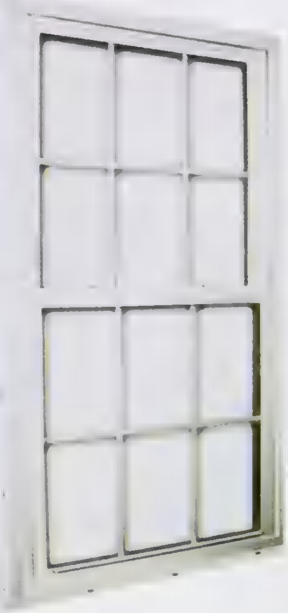
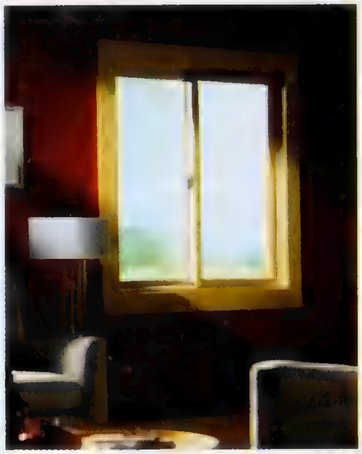
New Products

► Brick mold vinyl windows

To be introduced at the 2003 International Builders' Show, the MW Brick Mould Vinyl window line features a traditional MW180 brick-mold profile designed to look like a high-quality, painted wood window frame, with the performance capabilities of vinyl. Both the single-hung and double-hung offerings meet high structural performance standards for a variety of geographical regions, including coastal markets. Energy-saving glazing options include low-e, low-e/argon, tinted, tempered, or obscure. 800/999-8400. MW Manufacturers, Rocky Mount, Va. **CIRCLE 215**



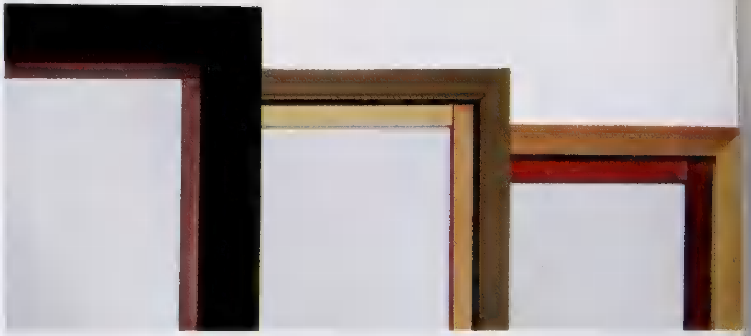


◄ Gliding window

The Andersen 200 Series gliding window broadens the Andersen 200 Series product line of windows and patio doors. The window features an interior in natural pine or prefinished white, a modular sizing system, and two different frame widths available in narrow 3¼" and full 4$\frac{9}{16}$" sizes to accommodate various wall thickness. Seamless frame cladding and various grille options are also available. 800/426-4261. Andersen, Bayport, Minn. **CIRCLE 217**

► Thermal window reintroduction

The reintroduced Kawneer Sealair 8400TL thermal windows are designed for remodel, historic restoration, or new construction. They are available fixed, offset fixed, single- or double-hung, and horizontal sliding. Flat face or beveled putty-glazed replication and a 4" master frame depth are standard. The windows feature conditioned thermal pockets and cast white bronze hardware. 877/767-9107. Kawneer, Norcross, Ga. **CIRCLE 219**



▲ Copper-clad options for wood windows

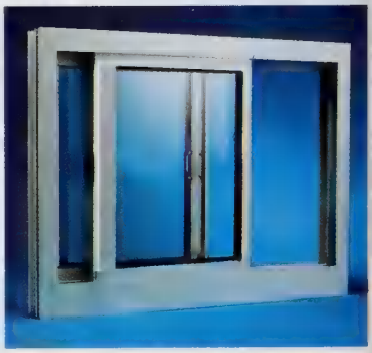
Pozzi has introduced copper and satin anodized finishes to its range of exterior clad options. Copper cladding is available on window-sash and patio-door-panel components and can be set alongside the aluminum cladding on the frame, which can be in a complementary or contrasting color. The copper cladding is available in three finishes: Hand-Rubbed Patina, Bright Copper, and Speckled Copper. 800/877-9482, ext. PR-037. Pozzi Wood Windows, Bend, Ore. **CIRCLE 216**

◄ Wood inside, vinyl outside

ProShield ProTilt is a redesigned double-hung tilt window featuring a tilt-latch design. A precision-tuned, block-and-tackle balance system holds the sash open in any position. ProTilt features a standard natural pine interior that can be upgraded to natural oak or prefinished white, and grille options include simulated divided lite, grilles in airspace, or pine/oak wood perimeter grilles. Glass options include standard insulated glass, low-e^2 glass, or low-e^2 glass with argon glass. A PVC exterior resists rust, corrosion, flaking, and peeling. 800/477-6808. Weather Shield Windows & Doors, Medford, Wis. **CIRCLE 218**

► Slider addition

The PrimeTek Window System from Moduline Window Systems now includes the slider series. The series has a 3¼" frame depth and features adjustable nylon ball-bearing rollers for quiet and smooth operation and easy replacement. A reusable glazing channel allows for easy field replacement with no special tools. 800/972-9110. Moduline Window Systems, Wausau, Wis. **CIRCLE 220**



◄ Solid bronze windows

Hope's Empire Series vintage bronze windows are custom manufactured from extruded solid bronze sections in fixed and double-weather-stripped operable configurations. The line accepts up to ¾" thick glass and features multiple true and false muntin shapes and dimensions, bronze insect screens, solid bronze hardware, and a choice of finishes. 716/665-5124. Hope's Windows, Jamestown, N.Y. **CIRCLE 221**

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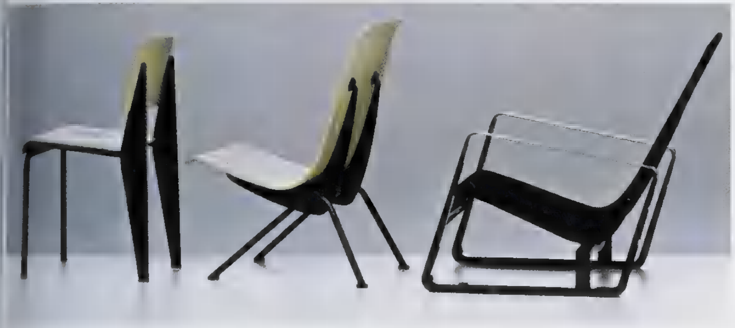
Product Briefs



▲ Reissued seating

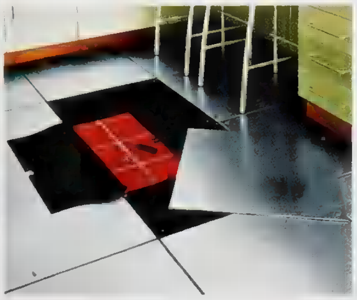
While for many years Jean Prouvé's designs have formed a key focus of the Vitra Design Museum collection, the company has recently announced that it has put various Prouvé designs into production. Vitra will present an initial selection of Prouvé designs, including the Standard, 1934 (left), Antony, 1954 (center), and Cité, 1930 (right) chairs. Products by Charles and Ray Eames, George Nelson, and Verner Panton have already been reissued by Vitra. 212/929-3626. Vitra, New York City. **CIRCLE 222**

► Floating panels

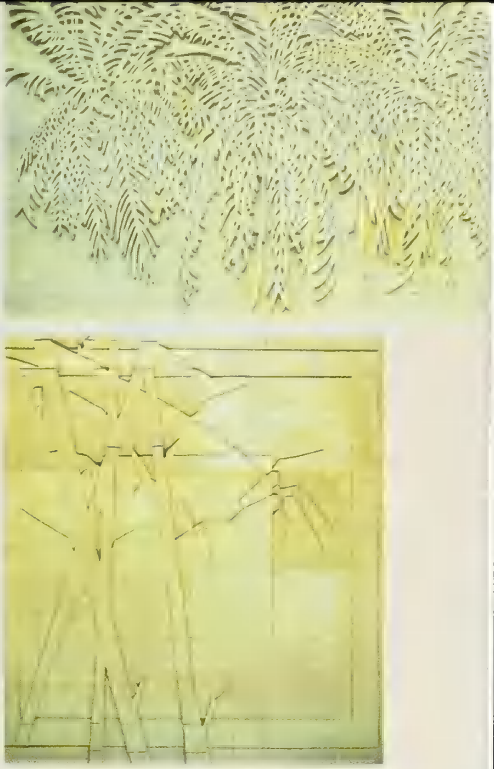
Siparium is a system of aluminum and glass sliding panels manufactured by Rimadesio that can be customized in terms of size, finish, glass color, and cross mullions. The panels (available in a maximum dimension of 6' x 10') slide on ceiling-mounted or wall-mounted tracks. The tracks support the entire weight of the panels so there is no need for a floor track, which may collect dirt or impede passage. The panels are offered in a choice of more than 20 brightly colored architectural glasses unique to Rimadesio. 866/989-1111. WTP, Englewood Cliffs, N.J. **CIRCLE 224**

▼ Stainless-steel tiles

Sistema Men stainless-steel tiles are available for residential or commercial applications in two sizes and are attached to rubber-plate supports that save the existing floor from damage. The Sistema Men modular Polis rug is made of a central design and three kinds of border modules that create a customizable "cityscape" pattern. 401/225-4040. Rochelle Vagenas Associates, Barrington, R.I. **CIRCLE 225**

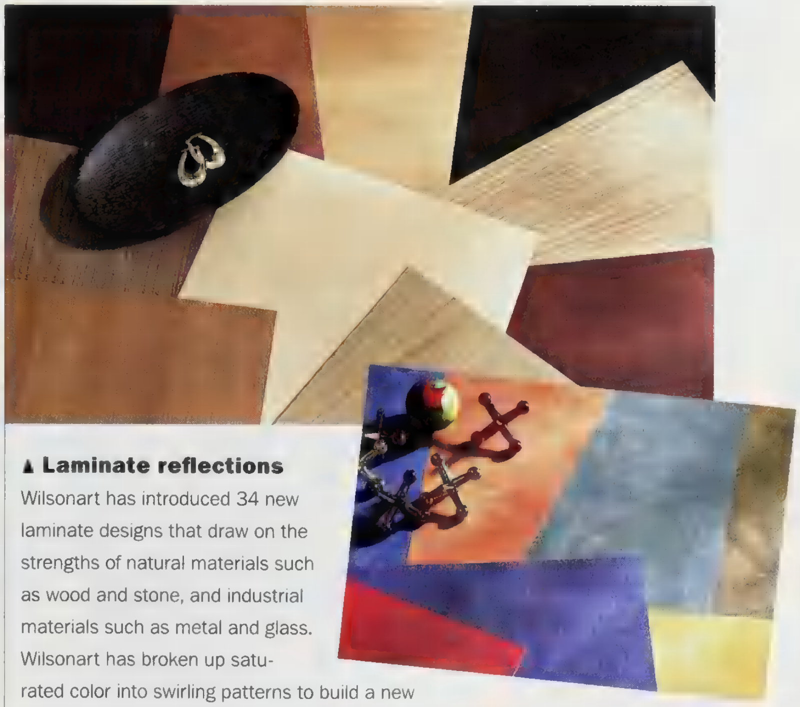


Product of the Month Art in Stone



Warisan collaborates with Bali-based stone muralist A.P. Gentile and his team of master craftsmen to create original works of art for homes, luxury hotels, spas and resorts, and restaurants. Gentile learned the art of stone relief from an enclave of artisans descended from long family lines of stone carvers. Warisans *Art in Stone* installations include the 200-square-foot *Lush Tropics* mural at the Universal Studios' Royal Pacific Hotel, as well as luxury residences from California to Bali.

***Art in Stone* is available as large, wall-size murals or in a wide range of panel sizes to fit any space. Motifs draw on folk and cultural elements, ranging from aquatic and tropical wildlife scenes to a reverie of Tibetan deities to abstract botanicals. Through Warisan's flagship showroom in Los Angeles the company offers furniture, lighting, textiles, Asian home accessories, and antiques from China, Indonesia, and Tibet. 877/WARISAN. Warisan, Los Angeles.** **CIRCLE 223**



▲ Laminate reflections

Wilsonart has introduced 34 new laminate designs that draw on the strengths of natural materials such as wood and stone, and industrial materials such as metal and glass. Wilsonart has broken up saturated color into swirling patterns to build a new series of laminate designs called the Brush Series (above right). The Brush Series combines texture and finish with metal-inspired tones and includes eight designs. Wilsonart has created consistent reproductions of traditional grains including cherry, oak, maple, walnut, and other wood species in the Architectural Woods series of laminate (above left). 800/433-3222. Wilsonart International, Temple, Tex. **CIRCLE 226**

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Product Briefs

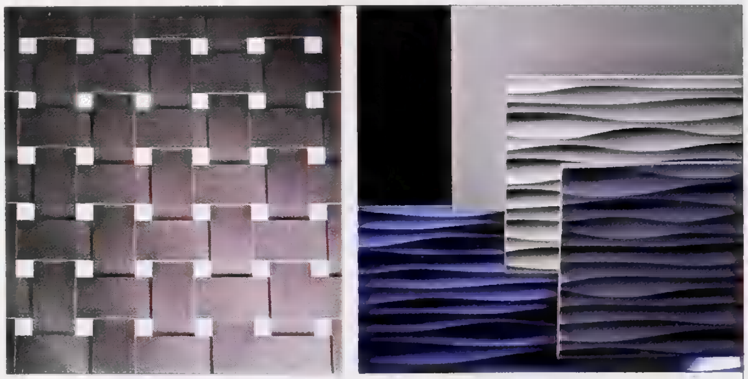
Held in London last September, 100% Design, the U.K.'s growing annual contemporary design event, featured an array of up and coming British and international talent. RECORD shares a few of the highlights. *Rita F. Catinella*

◄ Get a better handle on it

Turnstyle Designs has introduced a luxurious range of English hand-stitched leather furniture handles. Made by a master harness maker, each handle is hand stitched using vegetable-dyed English tan leather with beeswaxed twine. The handles come in three styles and colors, including black, tan, and chestnut. At the show, Turnstyle Designs also introduced new lines of window fittings and brass architectural hardware. 44/1271 325325. Turnstyle Designs, Devon, United Kingdom. **CIRCLE 227**

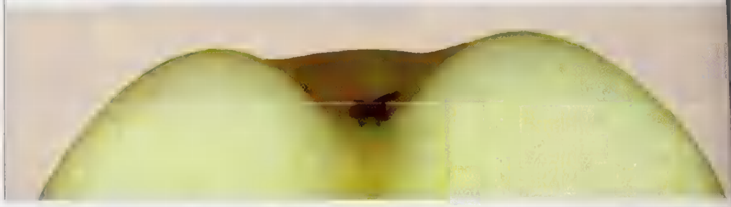
► Skeletal structure

One of the most striking furnishings on display at the fair was the Thin table by Matthew Hilton. A solid American walnut base and frame and a 6-mm, laminated-glass inset gives the dining table a visually light profile. Hilton has created a skeletal structure for the table by means of a distinctive leg detail, which is visible through the inset glass tabletop. Thin is also available with a solid glass top. 44/20 7739 1869. SCP, London. **CIRCLE 229**



▲ Woven and carved wood panels

The French company Marotte displayed examples of its woven and carved decorative panels. Woven panels are produced by weaving strips of wood veneer, creating a subtle volume effect. Different families of weaving are offered, including closed-weave, open-weave, and rattan and bamboo woven panels. The carved wood panels are fabricated in a range of materials and surfaces that include wave, dune, and fold effects. 212/206-1730. Architectural Systems, New York City. **CIRCLE 231**



◄ Digital delicacies

Dominic Crinson specializes in the design of digital ceramic tiles, digital wallpaper, and digital flooring. The imagery is fully customizable onto almost any material, regardless of texture, and images can be repeated as patterns or used as a single motif across the whole surface. Shown here is the top of an apple in ceramic tile and a repeating mushroom pattern in vinyl flooring. 44/20 7613 2783. Digitile, London. **CIRCLE 228**

▼ Award-winning glass artist

Architectural glass artist Wendy Ellis won a Crafts Council bursary that was established to assist new designers to present their work at 100% Design. Ellis exhibited a new range of glass panels that incorporate computer manipulated photographic transfers and stencils, kiln forming, and screen printing. At The Red Brick Glass Studio, Ellis produces glass for a variety of architectural commissions. Her glass designs are featured in windows, partition screens, lighting, doors, flooring, furniture, and sculpture. 44/1305 756415. The Red Brick Glass Studio, Dorset, United Kingdom. **CIRCLE 230**

Location: Bridgemarket, New York, New York Architect: Hardy Holzman Pfeiffer Associates Photographer: Keystone Film Productions

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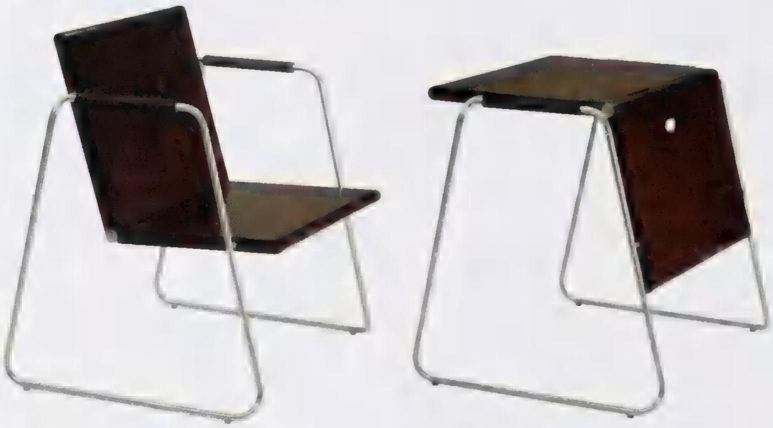

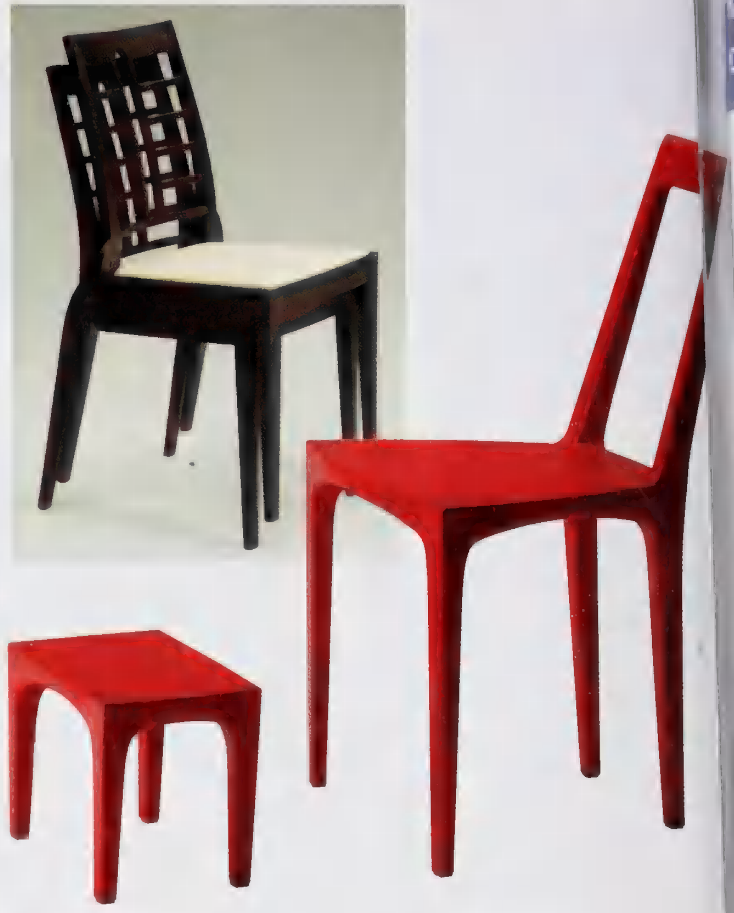

▲ Promosedia's hot seats

Promosedia, the international chair exhibition, was held last September in Udine, Italy, for the 26th consecutive year. One of the fair's highlights is the Top Ten, a competition for innovations in seating. This year's winners included the SeatTable (above), designed by Ilian Vladimirov Milinov for ORT of Sophia, Bulgaria. It was selected as Chair of the Year by journalists, architects, and designers attending the show who were smitten by its ability to change into a work table with one simple step. Other Top Ten winners included the LUX (above right), a utilitarian stackable chair made of beech, designed by Jan Sabro for Italteam of Italy, and the 44 (right), a whimsical chair and stool ensemble designed by Heidemaire Leitner for Franz Plank of Austria. 39 0432 229127. Promosedia, Udine, Italy. **CIRCLE 232**

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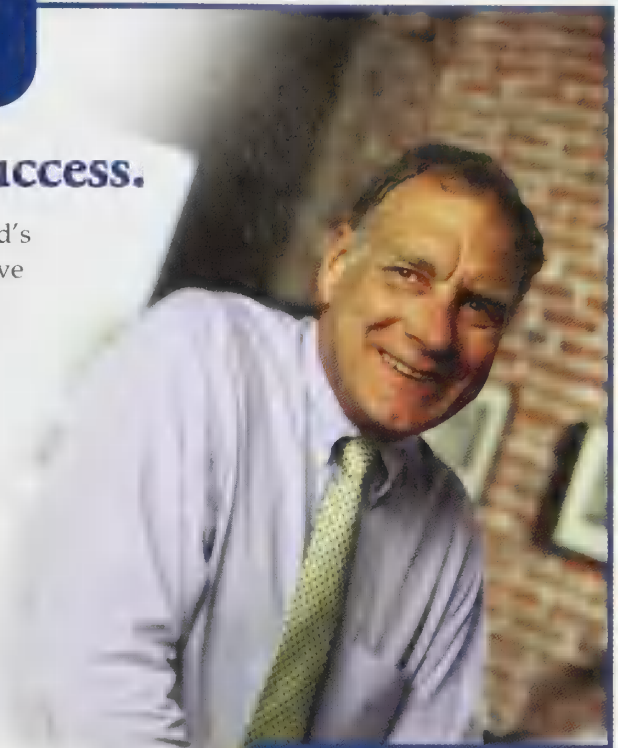

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Product Briefs

◄ Corten sculptures

The new Eden Series are monochromatic, linear sculptures that are suited for indoor or outdoor use in gardens, grottoes, parks, plazas, courtyards, water gardens, river walks, and atria. There are over 50 limited-edition sculptures created in Corten or finished carbon steel and ranging in size from 3' to 14' tall. Custom designs are also available for special projects. Each sculpture has a base plate designed to be bolted to a concrete pad. Slots of 1" and 1½" are precut into each base plate for easy installation. 708/424-8750. Rowe Associates, Chicago. **CIRCLE 233**

◄ Safer operating rooms

Safe-T Sheet vinyl flooring, designed fo the demands of hospital operating rooms, incorporates a ceramic technology embedded into the wearlayer of th floor. Safe-T Sheet also features heat-welded seams, low-contrasting visuals for reduced eyestrain, and it is stain-resistant to blood, Betadine, and other staining elements. 800/225-6500. Domco Tarkett, Houston. **CIRCLE 234**

► Double-duty doors

New Workable Surfaces doors from Marshfield DoorSystems maximize the intended design function of a space by combining a wood door with a dry-erase board, corkboard, or mirror. The doors are ideal for offices, hospitals, dorm rooms, hotels, or conference centers. Two whiteboard options and four cork colors, including buff, fawn, green, and steel gray, are available. 800/869-3667, ext. 2200. Marshfield DoorSystems, Marshfield, Wis. **CIRCLE 235**

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Product Literature

Hardwood project brochure

Junckers prefinished solid hardwood flooring has introduced a commercial project brochure for 2002. The 48-page, full-color brochure showcases more than 12 commercial projects designed by world-renowned architects and designers. 714/777-8425. Junckers Hardwood, Anaheim, Calif. **CIRCLE 236**

Office furnishings

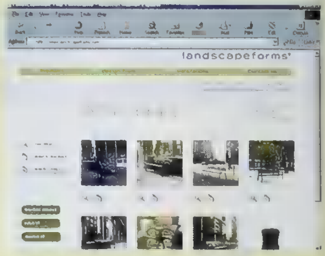
Vecta's new catalog details the Werndl office-furniture line. The 56-page color catalog combines detailed written information with scores of product and location photographs, emphasizing the benefits of the furniture system. Sketches depict workspace layout ideas and illustrate how models can be put together and rearranged for maximum efficiency. 972/641-2860. Vecta, Grand Prairie, Tex. **CIRCLE 237**

Concrete countertops

The Concrete Network's new catalog features a collection of concrete countertops from some of North America's finest artisans. 866/380-7754. The Concrete Network, Yucaipa, Calif. **CIRCLE 238**

NEW SITES FOR CYBERSURFING

Expanded site features high-res images of outdoor commercial furnishings **www.landscapeforms.com**



Online launch of the next generation of fittings and accessories from Villeroy & Boch **www.goHype.com**

This site highlights sign and neon products **www.signasign.com**

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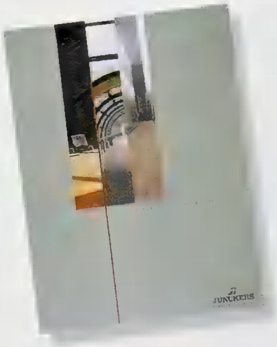
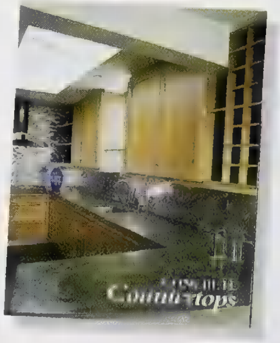
CD-ROM lighting catalog

LAM Lighting Systems now offers the company's complete new product catalog in CD-ROM format. The catalog runs via an integral Adobe Acrobat Reader program that allows the user to view complete product spec sheets in easy-to-read PDF format. No Internet connection is necessary, making the catalog ideal for remote use on job sites or at client facilities. 800/732-5213. LAM Lighting Systems, Santa Ana, Calif. **CIRCLE 239**





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Product Literature

Comprehensive catalog

Louis Poulsen offers a new catalog with 480 pages of information on the company's lines of interior and exterior lighting. The catalog is a sturdy, hardcover book that is conceptually bound by the three basics of the company's lighting philosophy: Function, Comfort, and Ambience. Photos of projects from around the world showcase the potential of the various product lines, while individual product spec sheets offer detailed descriptions of the company's collection of pendant, table, floor, wall, ceiling, bollard, inground-outdoor, and custom-designed lights. 954/349-2525. Louis Poulsen Lighting, Fort Lauderdale, Fla. **CIRCLE 240**

Tile technology

Bisazza, a manufacturer of glass mosaic and terrazzo tiles, has developed a CD that works as a virtual library showcasing the company's entire line of products. Specifiers can quickly navigate the disc, viewing the complete product line, including the mosaic collection, the newly introduced Smalto tiles, and a growing selection of terrazzolike slab products. The CD's Custom Blends program allows the architect to specify his or her own color-combination preference in either a random or precise ratio and to view the outcome instantaneously on-screen. Users can also browse through the images of sample borders, trims, and decorations, and review technical information and installation guidelines. 305/597-4099. Bisazza North America, Miami, Fla. **CIRCLE 241**

Kitchen and bath fixtures

Herbeau Creations presents a new catalog of classic French kitchenware and bathware. Herbeau also offers a complete line of coordinating design accessories, such as towel bars, lighting fixtures, and hand-painted decorative tiles. 800/547-1608. Herbeau Creations of America, Naples, Fla. **CIRCLE 242**

Marble guide

The Marble Institute of America has developed a color brochure that identifies the types of natural stone available to homeowners. Information about the care and maintenance of natural stone, a Q&A section, and tips on selecting and working with a qualified stone contractor are included. 440/250-9222. Marble Institute of America, Cleveland. **CIRCLE 243**

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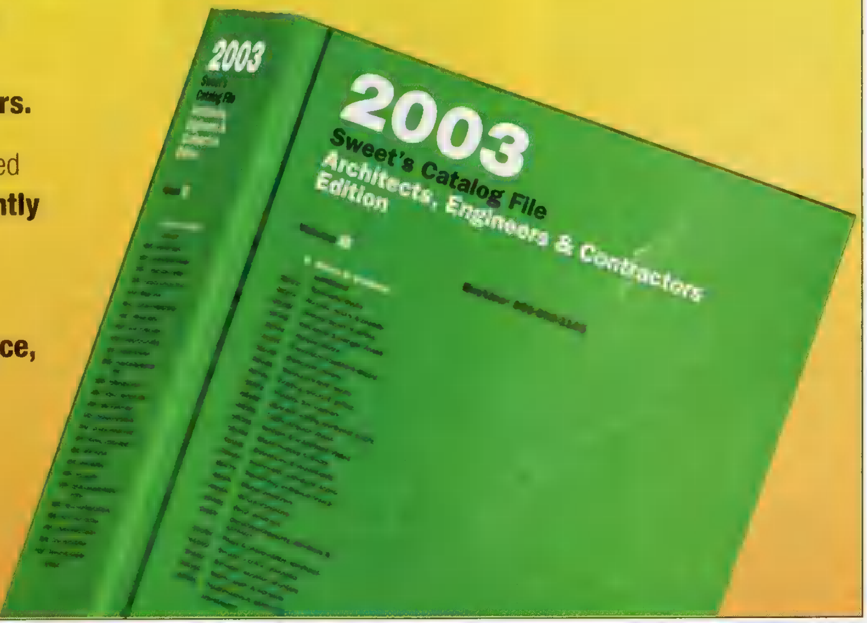

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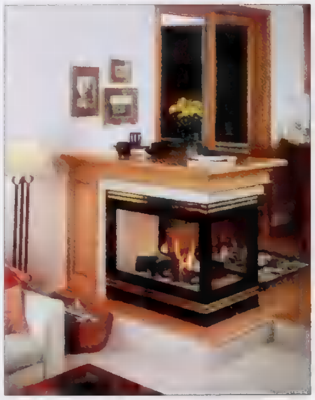

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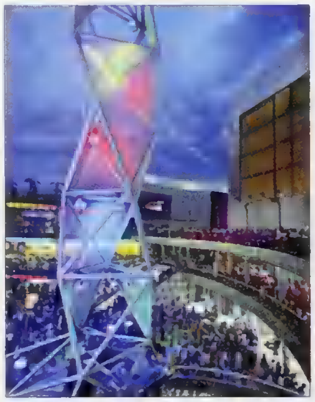

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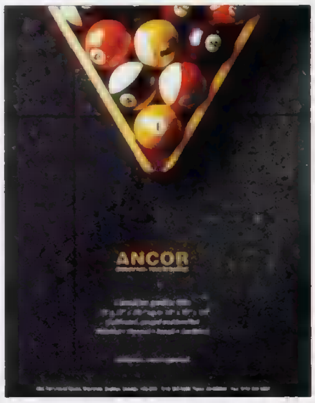

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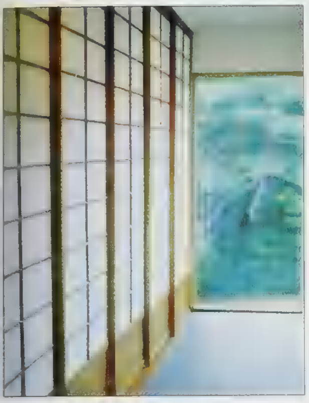

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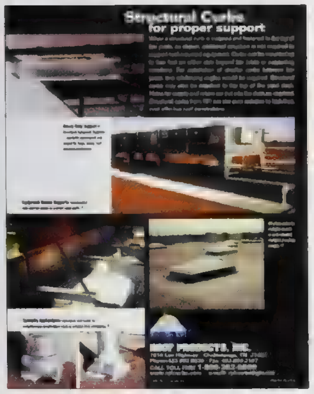
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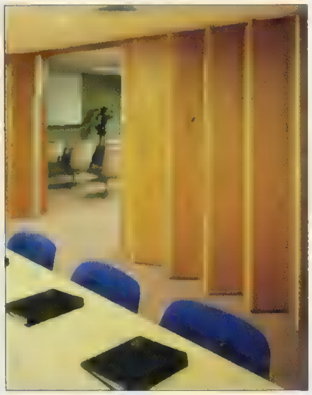

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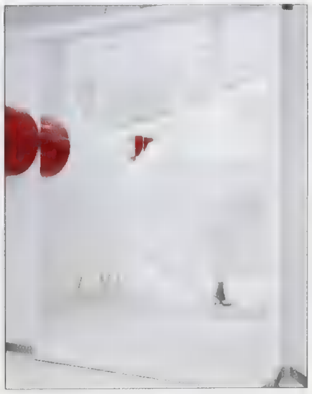

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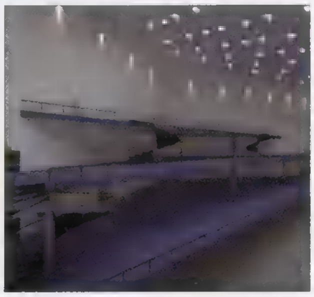

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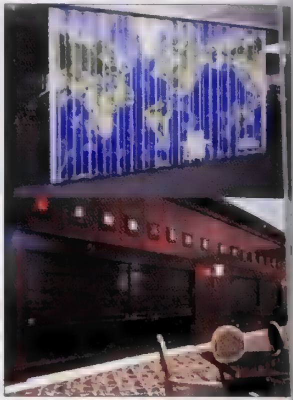

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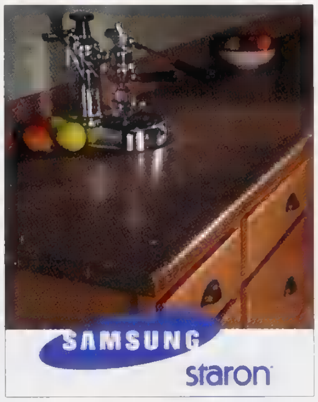

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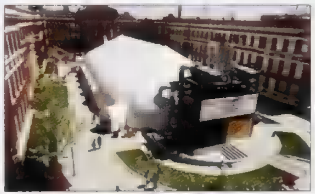

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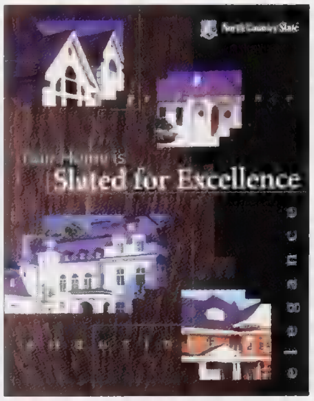

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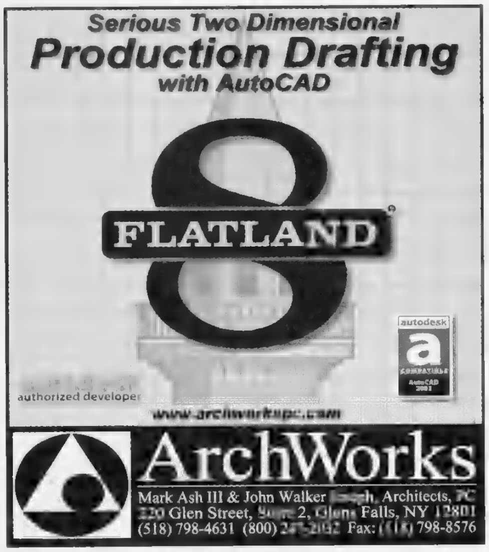

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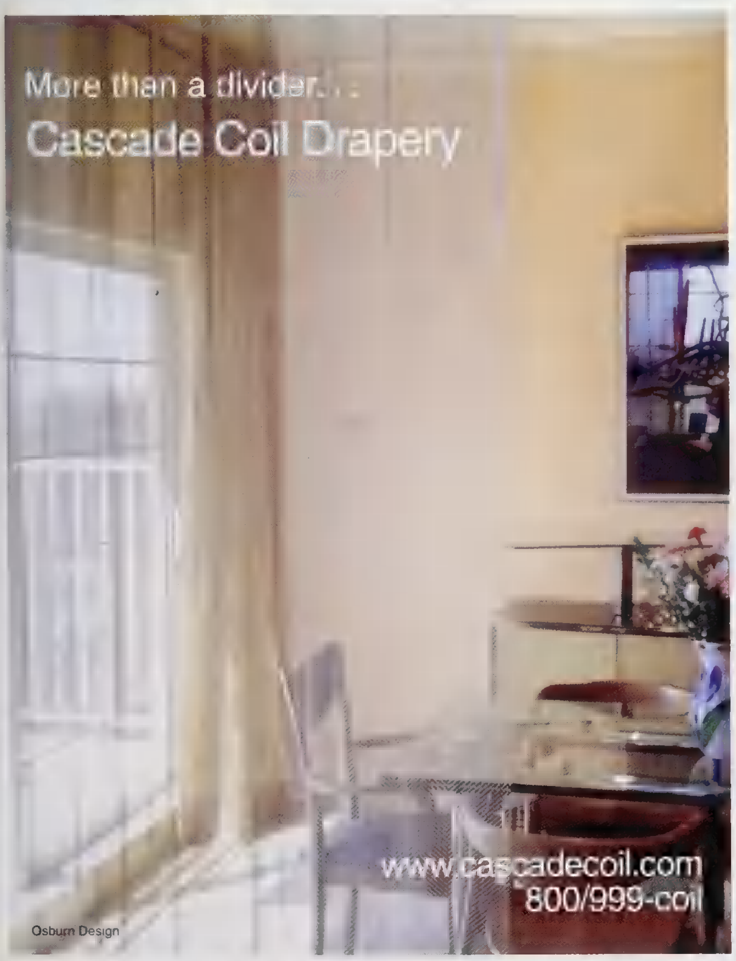

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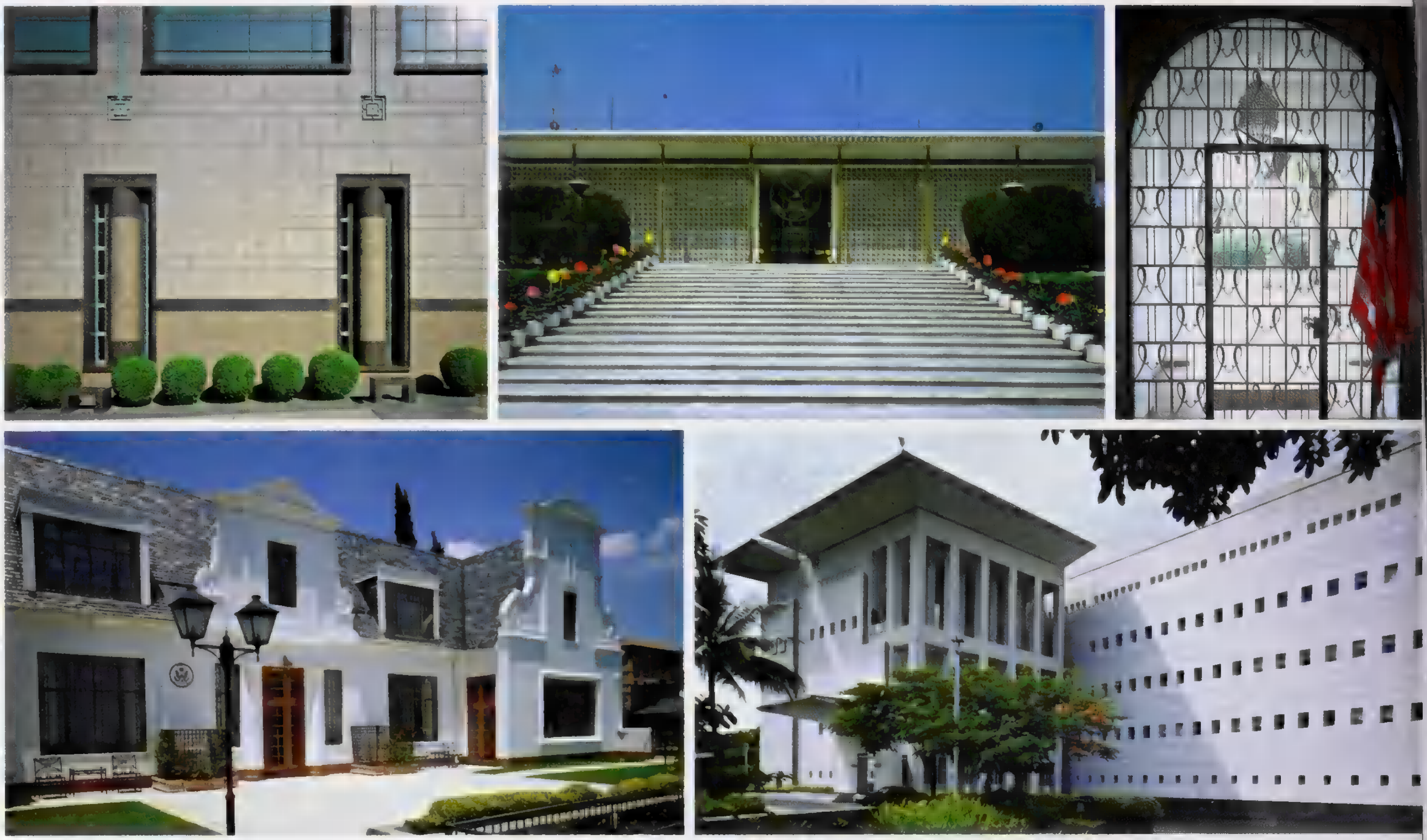

Elizabeth Gill Lui and Keya Keita discover the language of architecture

Interviewed by Jane F. Kolleeny

In 2000, Elizabeth Gill Lui and her daughter, Keya Keita, were ready to embark on the journey of their lives, one that would last two years and include 50 countries. For a project they call "Building Diplomacy," their travels sought to test the theory that embassy buildings are metaphors of cultural and historical values, rather than merely objects in themselves. Lui's lifelong career as an arts photographer and Keita's burgeoning skill in film made them a worthy documenting team.

Q: *In brief, what did you do?* Through the generous support of J. Landis Martin and the Office of Overseas Buildings Operations at the State Department, we visited U.S. chanceries and residences throughout the world, recording our journey through still and live-action footage of the architecture and the people, asking the questions such as: "Who are we as Americans? What does that mean? How does the world see us?" We also wrote a journal of our thoughts, observations, anecdotes, and adventures.

What inspired you to make the journey? We believe that in America's 200-year history, architecture has become the primary aesthetic medium that our nation has consistently funded and exported abroad. We sought to prove this and our underlying conviction that architecture and art speak a universal language that has great humanizing potential. To utilize its fullest benefits on the diplomatic stage is imperative, especially in our current day and age.

What results will come of your work? The primary goal is to publish a book with the attendant exhibitions that one would expect. As of now, one exhibition is planned at the Denver Art Museum. We are hopeful that the live-action portion of the work will be produced as a documentary and that the work will become a valuable archive for our country, since this is the first time the State Department has permitted anyone to undertake such extensive documentation of America's diplomatic properties. To me, architecture is both language and experience, and I hope this work offers viewers tools to decipher our connectedness to the human-designed world we inhabit. ■

Embassy photographs by Elizabeth Gill Lui; portraits by A. Arorizo

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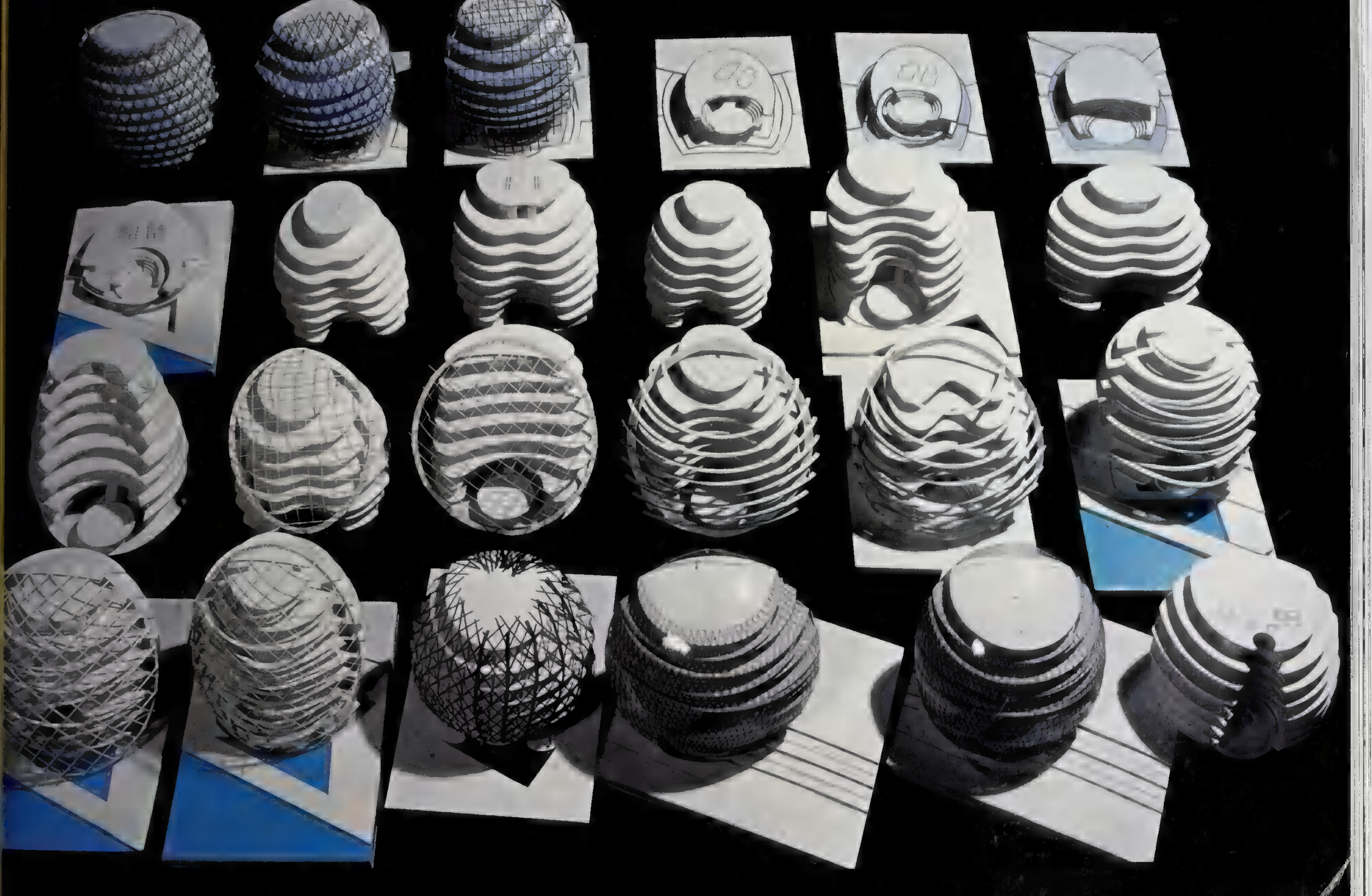
Foster and Partners' Design for London City Hall



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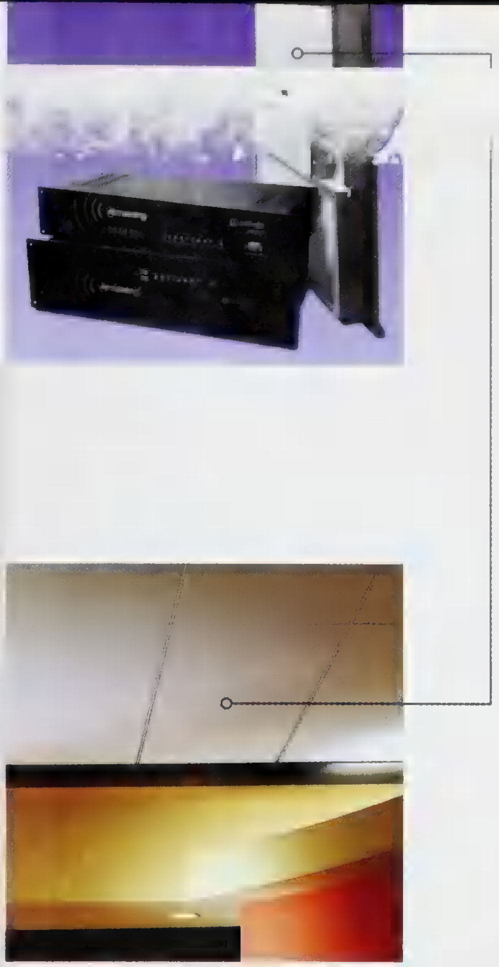

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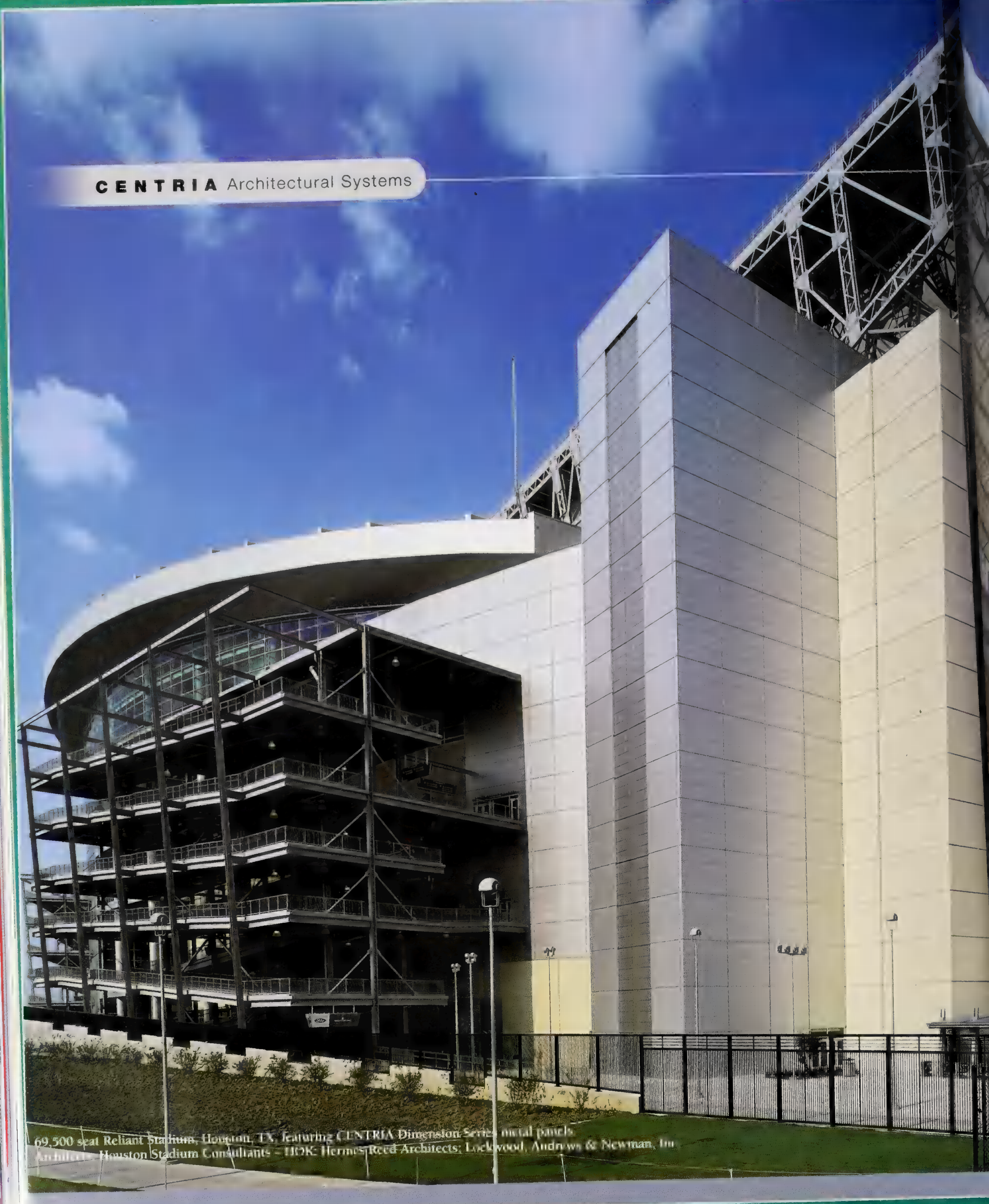

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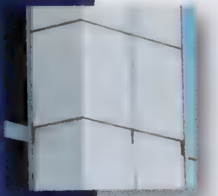
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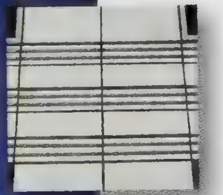
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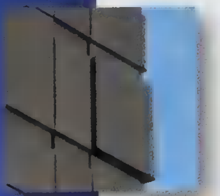
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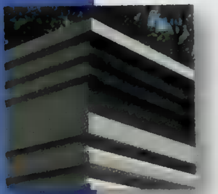
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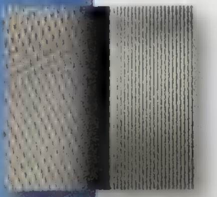
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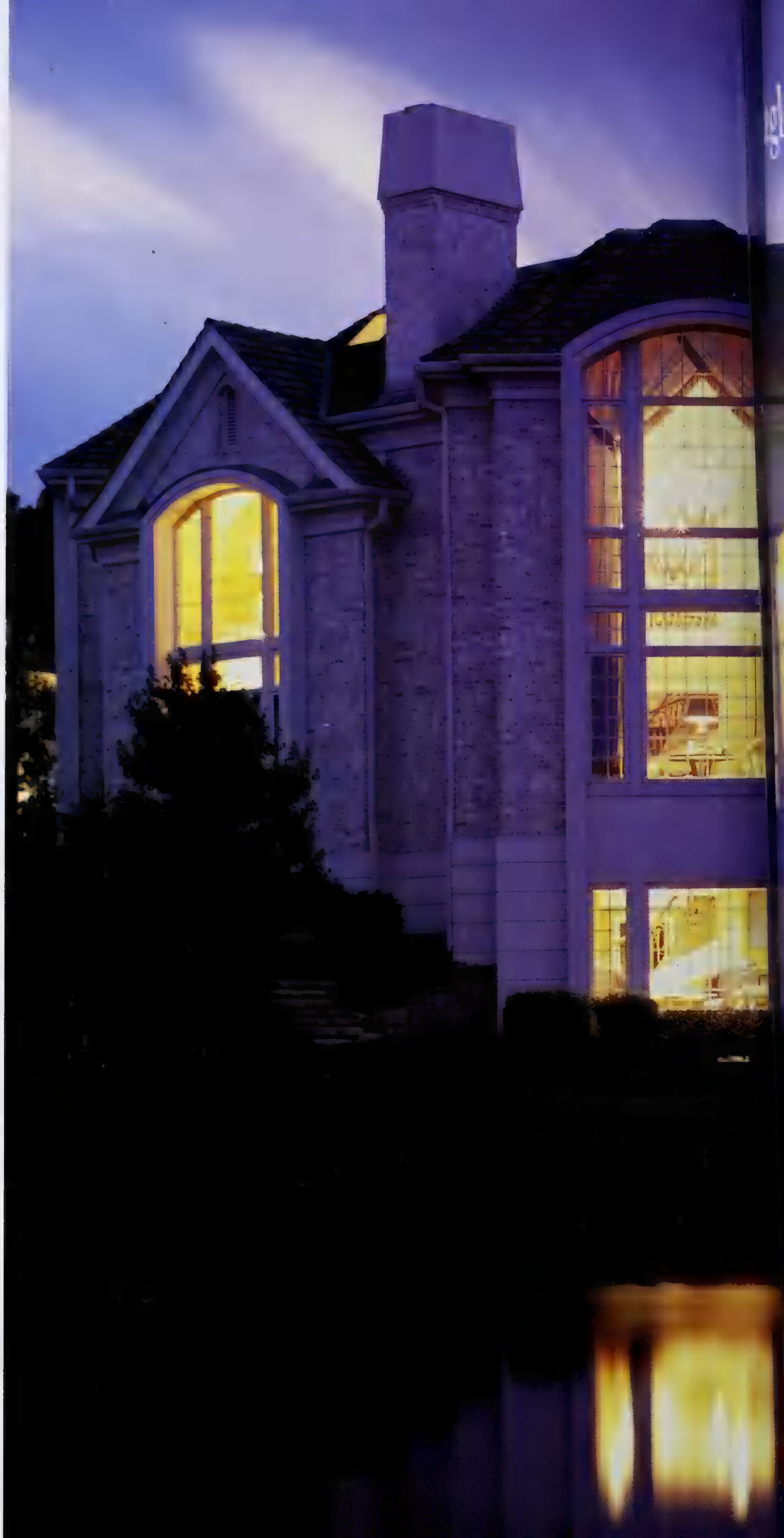

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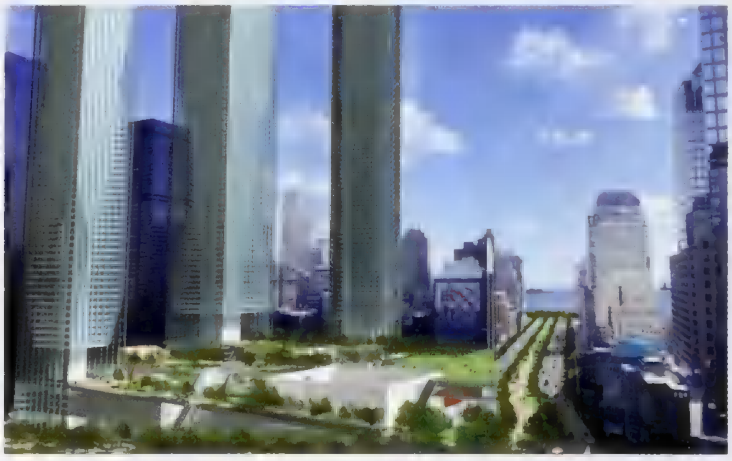

Courtesy of THINK

World Trade Center

The World Trade Center: Exciting videoclips of *Record's* January 7th World Trade Center event. The entire panel discussion, over an hour of stimulating discussion with leading critics and architects, will be available to watch on our site.

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Project Portfolio

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Pack your bags. Travel around the world for this month's featured projects. Link to the people and products behind this month's projects, including the Greater London Authority by Lord Norman Foster, and the York University Computer Science Building by Busby and Associates.

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BTS: Libraries

Photography © Steven Müller

Bookmark This! Browse February's **Expanded Building Types Study,** featuring ten library projects in addition to the magazine's coverage. China, Ireland, Canada, France and the US are all represented in this international selection of libraries. Plus, find project descriptions, plans, specs, photos, and links to people and products involved.

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Photograph Courtesy of Freecell

Design: Studio b Architects, a firm from Aspen, Colorado, is injecting some modern flair into a town better known for its antler chandeliers. **Work:** Freecell, a Brooklyn, New York firm, has created a line of furniture which produces enough income to allow the firm to work on lower profit architectural projects. **Live:** a selection of entries from an art exhibition sponsored by Bay Area Young Architects. The web gallery features many projects that we didn't have room for in the magazine. Plus, more news and features from the world of the emerging architect.

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Lighting

Simply Brilliant! *Record* features links to the people and products behind this month's look at lighting in clubs, churches, and schools.

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New this month: Computational Fluid Dynamics.

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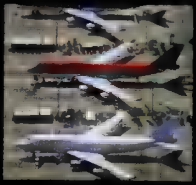

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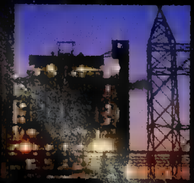

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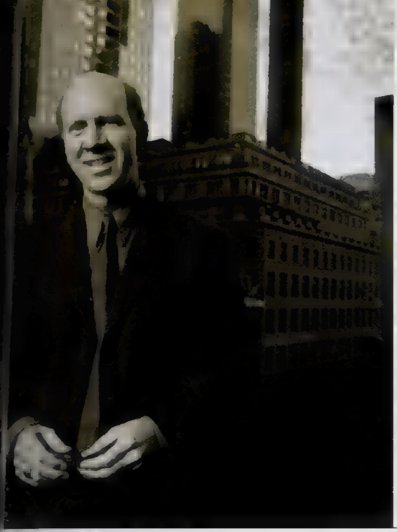

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Editorial

One Out of Nine?

By Robert Ivy, FAIA

What if you got what you asked for? That happened when architecture and planning leaped to the forefront of media attention late last year. In a single, widely publicized unveiling at the Winter Garden of Manhattan's World Financial Center on December 18, 2002, seven teams presented nine schemes for the redevelopment of the former World Trade Center site, an intellectual exercise capturing headlines and air time around the globe. What did we get?

Regardless of the turn of events, the value of the architects' contributions cannot be overstated. Thanks to their commitment, suddenly we all had a ray of hope for a situation that has been hotly debated, politically compromised, and heading rapidly toward the dustbin of mediocrity. The city and the nation deserved better than business as usual. Finally, we have had a glimpse of a positive direction, though significant work lies ahead.

These solutions face strong hurdles. As Hugh Hardy, FAIA, coordinator of New York New Visions Plan Review Task Force, pointed out at a Lower Manhattan Development Corporation (LMDC) meeting, "Without a realistic program and method for development, and with the lack of leadership from above, the schemes present a quandary." The crux of the problem remains: No real client exists for the largely theoretical program and the commissioning institutions are ad hoc*—subject to the governor's will or to the development community's parsimony. Will the projects ultimately belong to the public realm or to commercial interests? What will the roles become for leaseholder Larry Silverstein or mall owner Westfield America, not to mention the Port Authority of New York and New Jersey? How can visionary plans overlay the demands for transit, which has prompted the Port Authority to hurtle forward, building below grade? The powers-that-be are calling for solutions, when the best answers benefit from a longer view.*

Several observations seem relevant. The architects engaged in these plans followed the rules, with bold assertions. While the LMDC allowed modification and reduction of its original demands to return all 11 million square feet of office space to the site, the remaining sheer bulk still produced gargantuan responses by each team. The plazas are broad; the buildings, sky-high. The proposed scale is daunting, a fact clearly evident in the images of plans by Foster and Partners, or United Architects, or Richard Meier's team, where jumbo structures are counterposed against the skyline. By analogy, the massive towers arrayed along New York's Sixth Avenue, including the McGraw-Hill building, typically contain 50 floors; more than one World Trade Center scheme doubles that height.

By the look of it, the future of the tall building seems assured. Four schemes propose the tallest buildings in the world. While one of the original towers reached 1,368 feet, Daniel Libeskind's garden-tower hits 1,776 feet, and one of the THINK group's schemes exceeds 2,000 feet. The questionable validity of such extremes is pointed out by the renderings, in which height and bulk loom against the existing urban fabric. The SOM group's cluster, by contrast—limited to 60 stories (940 feet)—elbows itself into the thick of Lower Manhattan without lording it over the skyline. Somehow, the tallest metaphor smacks of hubris.

Some of the work seems reactive, a term that demands clarification: The events surrounding September 11 had an unavoidable influence on the schemes. For that reason, Foster's office replicated twin towers, making them nevertheless the "tallest, strongest, safest" towers in the world. This urge to rebuild, and to rethink, dual towers arising from the ashes of the destroyed World Trade Center seems inevitable, but demands reflection. Would we have built twin structures otherwise? Should they figure in the shape of the emerging city, or should we seek new forms for a new century?

While twin towers incorporated memorial expression in their form, Daniel Libeskind suggested retaining a significant percentage of the foundation plane, 70 feet below grade, as a memorial plaza. And though it would present complicated structural demands, the slurry wall holds memory authentically and poetically, without resorting to sentimentality. Libeskind's proposal, which captured critical admiration, deserves consideration and selection for the potent way in which it responds both to history

Editorial

and to the future. The asymmetrical, modulated skyline he designed reinforces and adds new forms to Manhattan without overpowering the city. Before leaping to acceptance, however, as in all of the proposals, individual elements deserve analysis, including the garden-laced sky tower, an attractive symbolic gesture but of questionable utility, or the forms of the Pennzoil-like office towers themselves.

Potent imagery from all of the proposals lingers, including THINK's third scheme's homage to the Eiffel Tower—a romantic, open armature reaching skyward. United Architects produced dizzying views of a delirious new Manhattan. The notion of an interlinked "city in the sky," in which both upper and subterranean floors of tall buildings house a public realm, with gardens and cafés, harks back to other urban visions (good and bad), including those of Antonio Sant'Elia's citta nuova, *or even John Portman's. The effects for the streetscape, however, remain problematic.*

Although it has largely been overlooked in critical discussion thus far, several teams devoted significant energy to sustainability, the larger subject of the current issue of this magazine. Foster and Partners produced a techno-marvel, dual-skinned tower, based in part on its work with the Commerzbank in Frankfurt, Germany, with interior gardens and operable window walls. THINK suggested harvesting high-level winds through turbines; Richard Meier's team captured sunlight through photosensitive glazing, which glows at night. Each idea demands scrutiny beyond the schematic.

At the RECORD *forum on January 7, architect Bernard Tschumi suggested that collage had been a potent 20th-century force but was unlikely to succeed unless done by a Braque or Picasso. However, by the publication date of this editorial, the LMDC and the Port Authority may have made their selections and tried to incorporate certain ideas into an urban plan. It would be difficult, if not impossible, to graft idea onto idea, scheme onto scheme. Short of a miracle, the result would be compromised. A better solution would be, after studying them all, to make a single choice (at this writing, the Libeskind scheme seems the most promising), allowing this one team to incorporate the best ideas into its own master plan, forging the design for a memorial plaza and the attendant public spaces and setting guidelines for subsequent development of commercial space, including office towers—a strong, clear shot at excellence for the years, and the unfolding ideas, to come.*

Robert Ivy

From The Descent

by William Carlos Williams

The descent beckons
as the ascent beckoned.
Memory is a kind
of accomplishment,
a sort of renewal
even
an initiation, since the spaces it opens are new places
inhabited by hordes
heretofore unrealized,
of new kinds—
since-their movements
are toward new objectives
(even though formerly they were abandoned).

No defeat is made up entirely of defeat—since
the world it opens is always a place
formerly
unsuspected. A
world lost,
a world unsuspected,
beckons to new places
and no whiteness (lost) is so white as the memory
of whiteness
With evening, love wakens
though its shadows
which are alive by reason
of the sun shining—
grow sleepy now and drop away
from desire

Love without shadows stirs now
beginning to awaken
as night
advances.
The descent
made up of despairs
and without accomplishment
realizes a new awakening:
which is a reversal
of despair.
For what we cannot accomplish, what
is denied to love
what we have lost in the anticipation—
a descent follows,
endless and indestructible

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Letters

Votary public

Over the past few months ARCHITECTURAL RECORD has featured some truly ugly buildings in its Projects section, but the ING Group's dreadful new headquarters in Amsterdam [January, page 92], with its pig-shaped body and spindly legs, is definitely going to be hard to beat.

Only your Residential Section keeps me sane.

—Rupert Essinger
San Diego

The richest of times, the poorest of times

What a marvelously rich and painfully difficult time to be an architect, as your December issue so thoroughly illuminates. Here's my take on why.

Your editorial on Muschamp [page 17]—one you and other editors have no doubt been itching to write and many of us have been itching to read. He's a brilliant Technicolor writer on breathless, intoxicating architecture but does need to be balanced by a second, more sober *Times* regular who stirs up fewer "unanticipated, flaming cocktails" but is not afraid to throw the occasional Molotov. In any case, you were gutsy to focus an editorial on your own medium and on a fellow professional, rather than on architecture per se.

Then there's Robert Campbell's well-written critique [page 49] of endless innovation and needless change by architectural rebels without a cause. Once again, he punctures the soft underbelly of our field—the heady invention but "rootless confusion" that makes architecture avant-garde and exciting, but tends to marginalize us as frantic artistes in the long run. Change for change's sake, rather than timely and genuine change that truly punctuates time and place, is addictive fun but ultimately the low and easy road.

John Czarnecki's piece on clients "taking a leap of faith" [page 72] is also pithy. Our society is far more blessed with design talent than with clients who take advantage of it. The extra time, money, and patience to get things right is much rarer in the U.S. than Europe. Anything you journalists can do to enlighten, reward, and raise the bar for those who commission buildings in this culture is profoundly appreciated. Speaking of appreciation, we all need to remember that these clients are bigger risk-takers than their architects, even though the latter preen and strut their creative feathers so proudly and conspicuously.

Joseph Giovanni's "Ten Degrees of Modernism" [page 85] highlights some impressive emerging talent. Generally you need an angle and/or signature to make it with the media. In my day it was solar energy and regionalism; then it was theory; now it seems to be image and artistry. (Tomorrow it may hopefully be urbanism and ecology.) Design *is* more visually refined and sophisticated now, as well as more formally adventuresome and liberated—a true accomplishment of which to be proud. But this more specialized virtuosity and newfound celebrity have been bought at considerable cost—less knowledge and power on the construction site, diminished fiduciary clout and moral authority in the boardrooms of private and public clients, and flagging respect among day-to-day users of our buildings.

The articles on designing in outer space and in virtual space are provocative. The former because it brings into question the priority to build ultra-expensive communities in space when as many as 80 percent of the people on earth are estimated to live in poverty. Ironically, virtual architecture may be the way out of this moral dilemma: Let our most talented and visionary designers inspire us by constructing the costly, never-dreamed-of worlds with electrons, much as novelists do with words and moviemakers with celluloid. Then we may have enough human and natural resources to construct more good architecture and urbanism on earthly ground.

It is easy to pine for simpler days and first principles. However, I don't see anybody or any force on the scene that is strong enough to get us back to the basics of "commodity, firmness, and delight" or a contemporary interpretation of "health, safety, and welfare." The wake-up calls on our excess, compulsive change, and individual self-expression—issues your articles have brought into relief in different, even conflicting ways—will continue to come from an increasingly disgruntled and militant developing world that simply won't put up with our snowballing levels of consumption, aggrandizement, and self-indulgence; nor will our ecosystems tolerate them.

Magazines like yours can help us see beyond the trendy immediacies of the present while keeping us abreast of best practices in the profession. Thanks for getting better at the former, while continuing to report on the cavalcade of new work.

—Doug Kelbaugh FAIA, Dean,
Taubman College of Architecture
and Urban Planning,
University of Michigan

Youth, not wasted on the young

I applaud ARCHITECTURAL RECORD's commitment to the "youth" of our profession in the December issue. Your Archrecord2 section of your Web site, your monthly inclusion profiling our profession's younger members, and "Design Vanguard 2002" are a bold step in the right direction to include young designers, to build confidence and motivation, and to provoke healthy debate and criticism of the current state of architecture. After reading your introduction to "Design Vanguard 2002" [page 85], however, I am concerned that the entire focus of the article was on how the profession's youth, who are providing today's leadership, lack rigor and discipline and are overcompensating with blind optimism. One issue not fully demonstrated in this article is the current sustainability revolution successfully challenging our profession. Although I applaud the individuals presented here, I believe we are making huge progress in the products and processes we infuse into our designs, and that is underrepresented in "Design Vanguard 2002." The U.S. Green Building Council continues with it's exciting LEED rating system and is adding a rigor and discipline that our architect idols of yesteryear could only imagine.

I applaud the energy of the designers represented in your December "Design Vanguard," and I raise my glass for 2003 to cheer those designers and urge this profession to look deeper and understand that every conscious design decision we make on this planet can change our quality of life forever.

—Peter Levasseur, AIA, LEED,
Ewing Cole Cherry Brott,
Washington, D.C.

Corrections

In the January 2003 news story about the AIA and NCARB's accord with the ACE [page 29], the name and title of NCARB's executive vice president Lenore M. Lucey, FAIA, were incorrect. In the December 2002 news story about the rebuilding of Lower Manhattan's PATH station [page 26], credit for the station should also have included the Louis Berger Group and subcontractor RenderTHIS.com.

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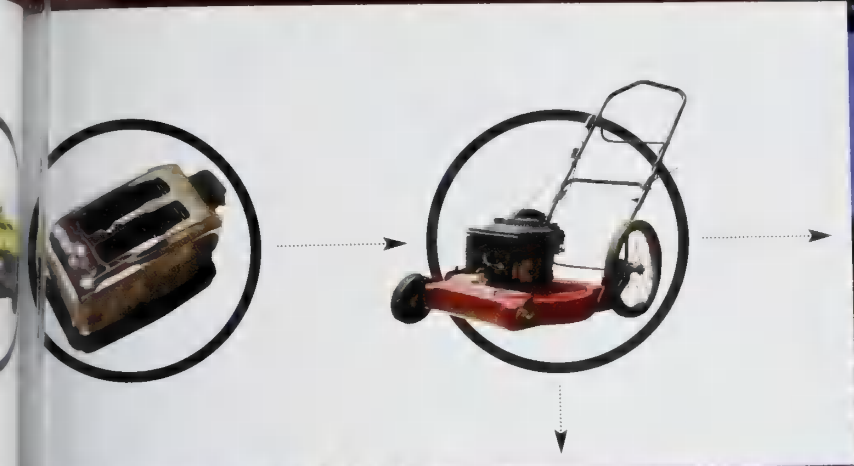

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REBUILDING LOWER MANHATTAN

Architects at the forefront as they show Ground Zero aspirations

By John E. Czarnecki, Assoc. AIA

If it was unclear before, it became official on December 18: Architecture is now front and center as the focus of discussion regarding the future of the World Trade Center (WTC) site. Commissioned by the Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey, seven teams of world-renowned architects presented nine proposals on that day in the Winter Garden of the World Financial Center in New York City.

In terms of architectural design presentations, this was a sort of Super Bowl rarely seen in the profession. All three hours of presentations were broadcast live on NY1, a local cable news station. Architects making their pitch included Lord Norman Foster, Greg Lynn, Daniel Libeskind, Rafael Viñoly, Peter Eisenman, Richard Meier, Steven Holl, and Charles Gwathmey. They offered a glimpse of what the future of the Ground Zero site could be, but at press time in mid-January it was unclear if any of their visions would become reality, or how the process would unfold.

The LMDC and the Port Authority were expected to develop a land-use master plan for the site by early February. That plan, developed by Stanton Eckstut, FAIA, working for the Port Authority, with Alexander Garvin, the LMDC's vice president of planning, design, and development, will likely include the footprint of one of the nine schemes that the architects developed. How the land-use plan will then be realized has not been spelled out.

RECORD presents in-depth coverage of the latest World Trade Center site designs by the seven teams.

- **The nine schemes, page 32**
- **"A Defining Moment for Architecture": Analysis by James S. Russell, page 46**

For updates on the planning of Lower Manhattan, visit *www.architecturalrecord.com*.

Designs without client

The teams developed their plans based on a program from the LMDC and the Port Authority that has little variation from the uses that were previously on the site. The key exceptions are a call for a home for a cultural institution, a memorial, a park, and approximately 6.5 to 10 million square feet of office space compared to the 11 million square feet that had been in the WTC. The lack of a clearly redefined program for the site, reflecting the reality of a depressed market for Lower Manhattan office space, was increasingly troubling to the New York architecture and real estate communities after the latest proposals were unveiled. "They are starting with a design and hope to arrive at a program," Bernard Tschumi told *The New York Times* in a January 1 article.

"There are two minor impediments—there's no program and no client," Richard Kahan, the president of Urban Assembly and Take the Field, dryly stated in a January 7

Presenting their schemes on December 18, 2002, were (top row, from left) Norman Foster, Steven K. Peterson, of Peterson/Littenberg Architecture and Urban Design, and Daniel Libeskind; (middle row, from left) Rafael Viñoly, of the THINK team, and Roger Duffy, of Skidmore, Owings & Merrill; (bottom row, from left) the team of Peter Eisenman, Charles Gwathmey, Richard Meier, and Steven Holl, and Greg Lynn presenting for the United Architects team. The presentations were made in the Winter Garden of the World Financial Center, and the designs were exhibited in that space through February 2.

PHOTOGRAPHY: © RAMIN TALAIE

United Architects
Foreign Office Architects, Greg Lynn FORM, Kevin Kennon Architect, Reiser+Umemoto RUR Architecture, Imaginary Forces, and UN Studio

United Architects includes architects from New York, London, Los Angeles, and Amsterdam.

- Single building (1, 2, 6) that is really five structurally independent towers, the tallest of which is 1,620 feet tall
- Building includes more than 10 million square feet of space
- Towers (3, 4, 7) act as a curtain on the site, ringing the site, directing people to look up
- Skyway—a sort of "city in the sky" (5), with five floors of contiguous space at 800 feet above ground
- Areas of refuge every 30 floors in case of disaster
- Vertical sky gardens (5) are arranged every five floors throughout the complex
- A Sky Memorial will be atop one of the towers, and another memorial will be at the footprints below grade

forum called *Waiting for Ground Zero* sponsored by RECORD and moderated by editor in chief Robert Ivy, FAIA (see the news archive at www.archrecord.com for a complete story on *Waiting for Ground Zero*). The client, at least for the design study exercise, was the LMDC and the Port Authority, but developer Larry Silverstein still holds the lease for the WTC office space, and Westfield America, which operated the underground shopping, expects to rebuild the retail space. The LMDC does not have authority over the

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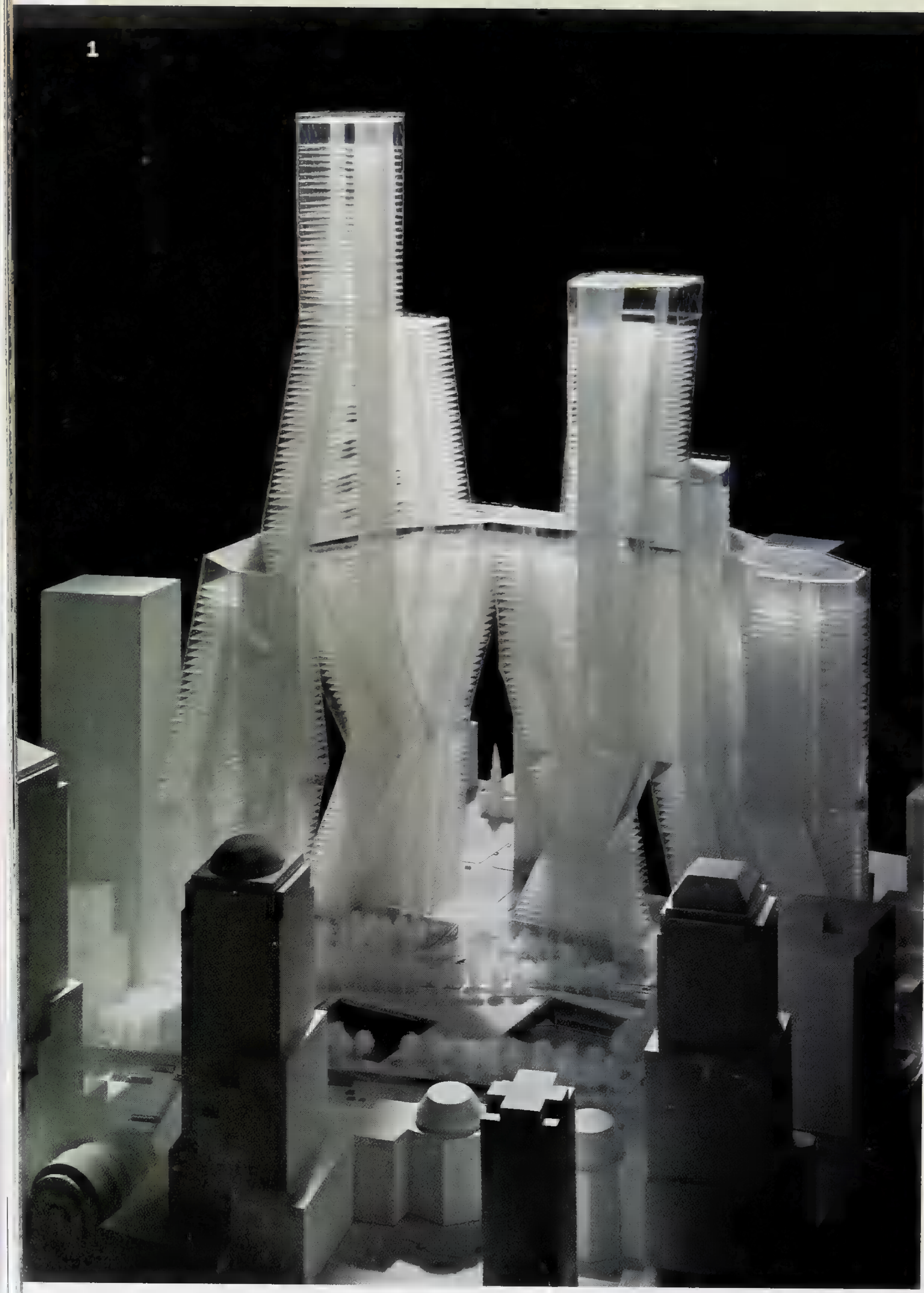

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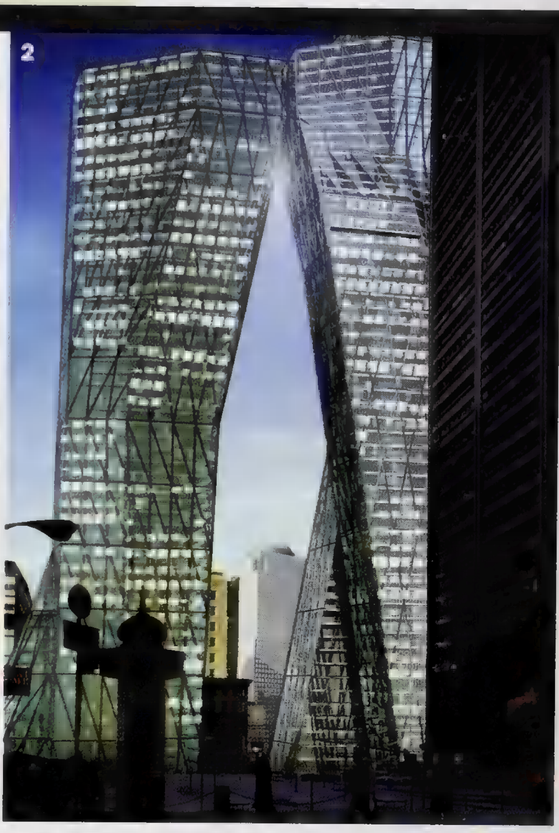

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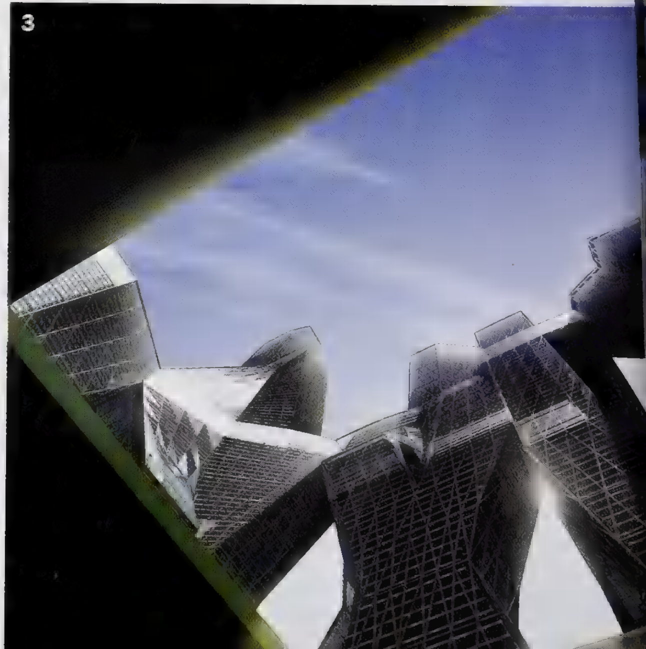


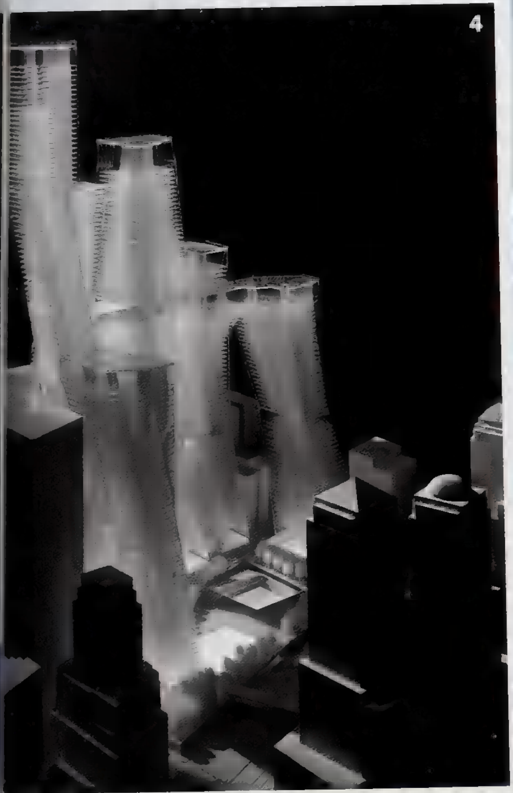
land, which is owned by the Port Authority, an agency jointly controlled by governors George Pataki of New York and James McGreevey of New Jersey. New York architects have asked: If there is not a clear client, how can the LMDC expect great architecture?

RECORD's forum was one of many events and discussions held last month in New York City related to the latest proposals. New York New Visions (NYNV), a pro bono coalition of 21 architecture, planning, and engineering organizations, released a 42-page evaluation of the nine concepts in mid-January. The document can be found on the NYNV Web site, www.nynv.aiga.org. Hugh Hardy, FAIA, chair of the NYNV Plan Review Task Force, said of the plans, "If they are to be more than an illustration in an architectural history book, they must also be realistic—they must be able to be phased, to incorporate changing program needs and multiple participants over time, to fit within the context of the Lower Manhattan community."

And what is Beyer Blinder Belle (BBB) doing? The role of the New York firm has been diminished since it produced the first round of urban design proposals [RECORD, August 2002, page 23] for the site in July 2002. In a statement released to coincide with the December 18 unveiling, BBB stated, "The planning team led by Beyer Blinder Belle and Parsons Brinkerhoff continues to serve as consultants to the Port Authority, providing analysis and insight on planning implications of various concepts for West Street, as well as transportation studies related to commuter bus and ferry access to Lower Manhattan. BBB will provide consultation to Port Authority staff as they analyze the nine designs."

Prodigious amount of work

Six of the teams were selected in a process in which 406 teams had submitted to a call for architect qualifications. The seventh team, Peterson/Littenberg Architecture & Urban Design, had been working as in-house urban design consultants to the LMDC since spring 2002. Each of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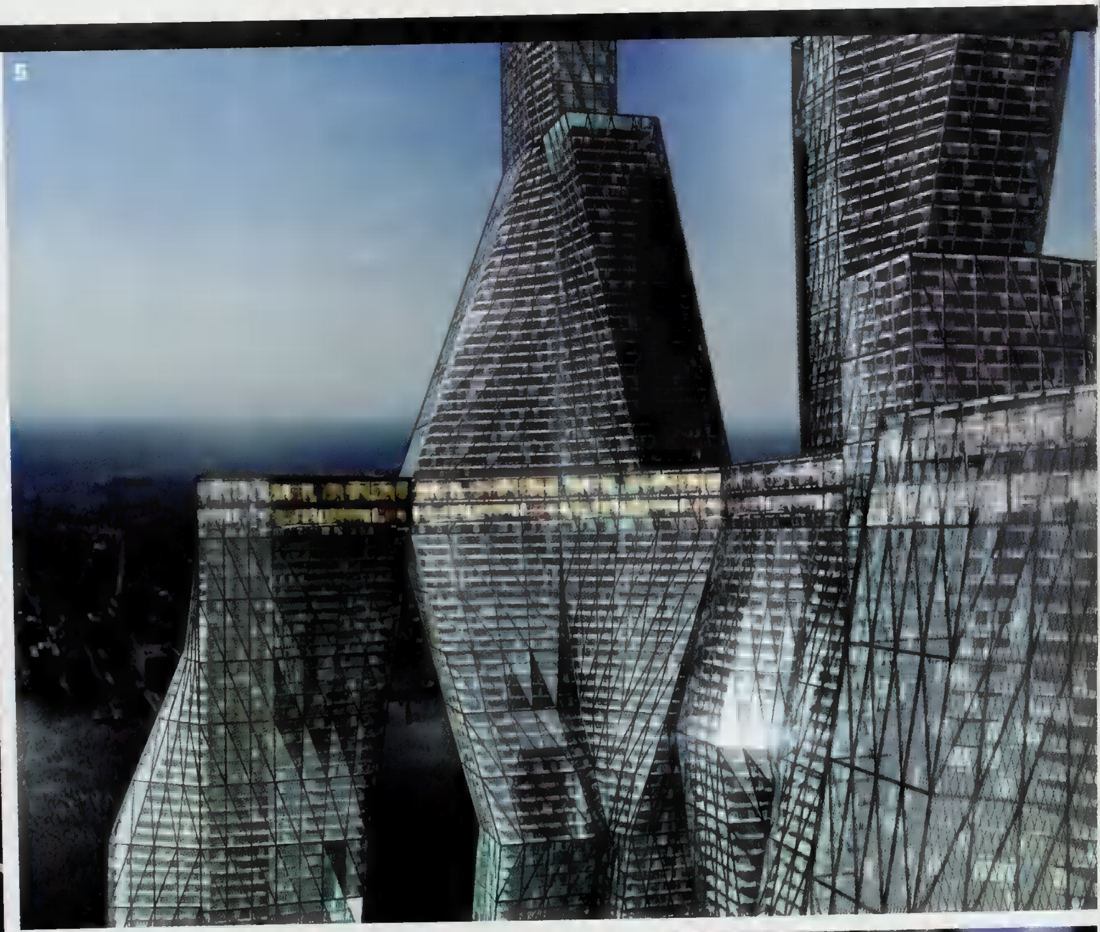
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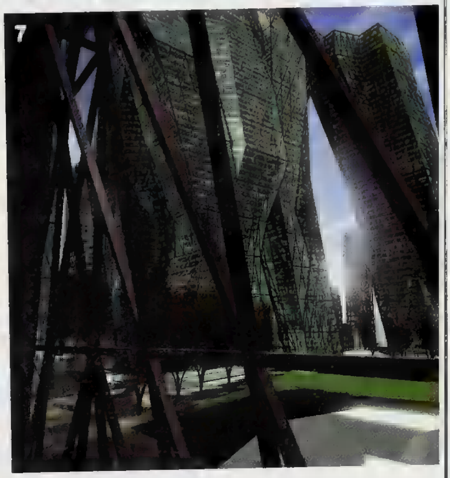
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IMAGES: COURTESY UNITED

the seven teams produced their proposals in 11 weeks and were initially paid a stipend of only $40,000, although some teams spent well over $500,000 developing their schemes. The LMDC has since authorized an increase in the amount paid to the teams to a sum not to exceed $1.35 million in the aggregate. Each team produced models, drawings, computer renderings and animations, and some produced videos. The work was on display in the Winter Garden through February 2.

Are there clear favorites among

Studio Daniel Libeskind with Gary Hack, Hargreaves Associates, and Jeff Zupan

Berlin-based Daniel Libeskind is the only architect to implement the bare slurry wall as part of the design.

- Includes 1,776-foot-tall tower (1, 2) at the site's northwest corner with the "Gardens of the World" at the top
- Memorial space (6) that is some 70 feet down on bedrock foundation with slurry wall visible to the west
- Museum will serve as the entrance into memorial (6)
- Two public spaces: Park of Heroes and Wedge of Light (4)
- An elevated walkway (1, 5) would serve as a memorial promenade encircling the memorial site
- A performing arts center is included
- A rail station concourse (3) links PATH trains, subways, hotels, the performing arts center, offices, and retail
- Buildings are situated for a ray of sunlight to show on September 11 each year from 8:46 A.M. to 10:28 A.M.

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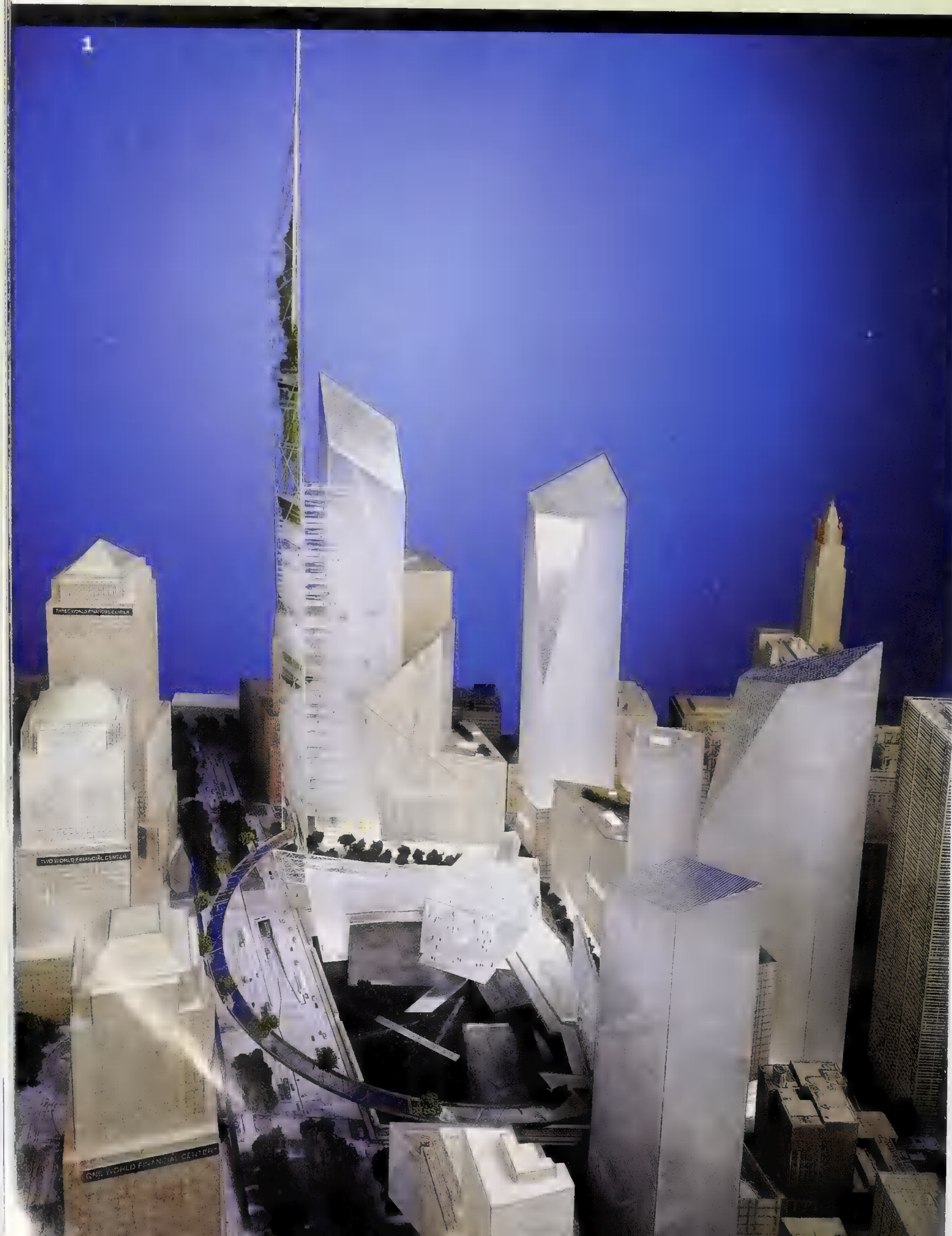
THREE WORLD FINANCIAL CENTER
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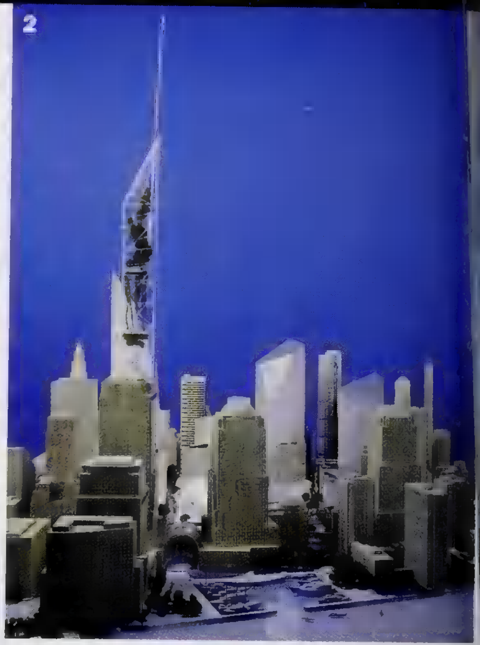

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IMAGES: COURTESY STUDIO DANIEL LIBESKIND the schemes? Not necessarily, although the Foster plan—the only one to have what appears to be twin towers—leads in two national polls. An online CNN poll that asked people to vote for a favorite garnered nearly 300,000 votes through mid-January. Foster and Partners received 24 percent of the vote, followed by Think and Libeskind (18 percent each), United Architects (14 percent), Peterson/Littenberg (12 percent), the Meier team (9 percent), and Skidmore, Owings & Merrill (SOM), with 5 percent of the vote. A similar *Newsweek* online poll had more than 101,000 votes through mid-January. The schemes by Peterson/Littenberg and Foster and Partners each received 22 percent of the vote, followed by Think and United Architects (15 percent each), the Meier team (14 percent), Libeskind (8 percent), and SOM (4 percent).

Tall statements

Although the teams came up with widely divergent designs, a number of them had common elements. All of the proposals respect the footprints of the twin towers in some way—a few propose leaving the tower footprints alone with only a glass-bottomed water feature. The LMDC called for "a tall symbol or structure that would be recognized around the world," and all of the teams incorporated at least one. In fact, four called for the world's tallest building or structure. Many of the plans also propose "green" spaces or gardens at upper levels in the towers. In descending order from the tallest, the tall structures are by Think (2,100-foot-high Great Hall tower), Libeskind (1,776 feet), Foster (1,764 feet), United Architects (1,620 feet), Think (1,600-foot open-lattice World Cultural Center structure), Peterson/Littenberg (two 1,400-foot-tall buildings), the Meier team (1,111 feet), and SOM (940 feet). Think's Sky Park scheme proposes three tall buildings of any height based on market demand. Currently, the 1,483-foot Petronas Towers, in Kuala Lumpur, are the world's tallest buildings, and the 1,813-foot CN Tower, in Toronto, is the world's tallest freestanding structure. The

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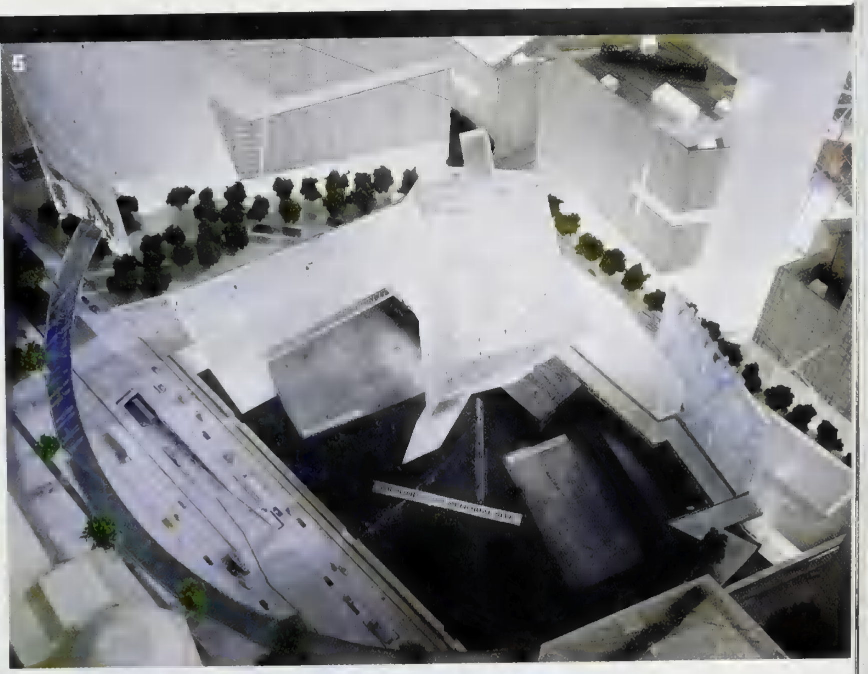
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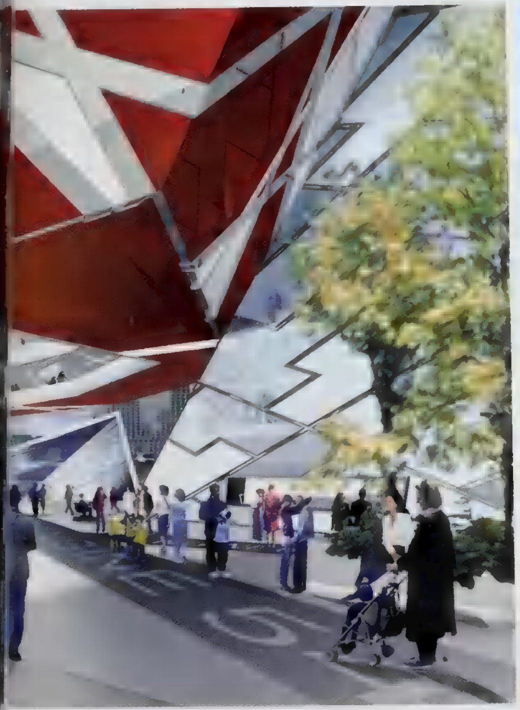

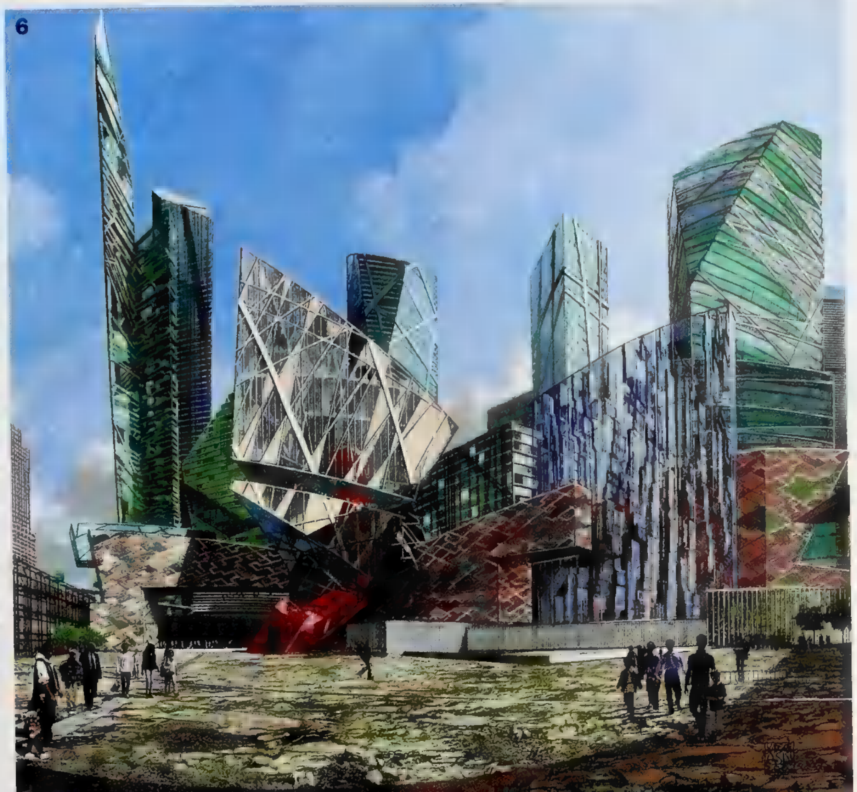
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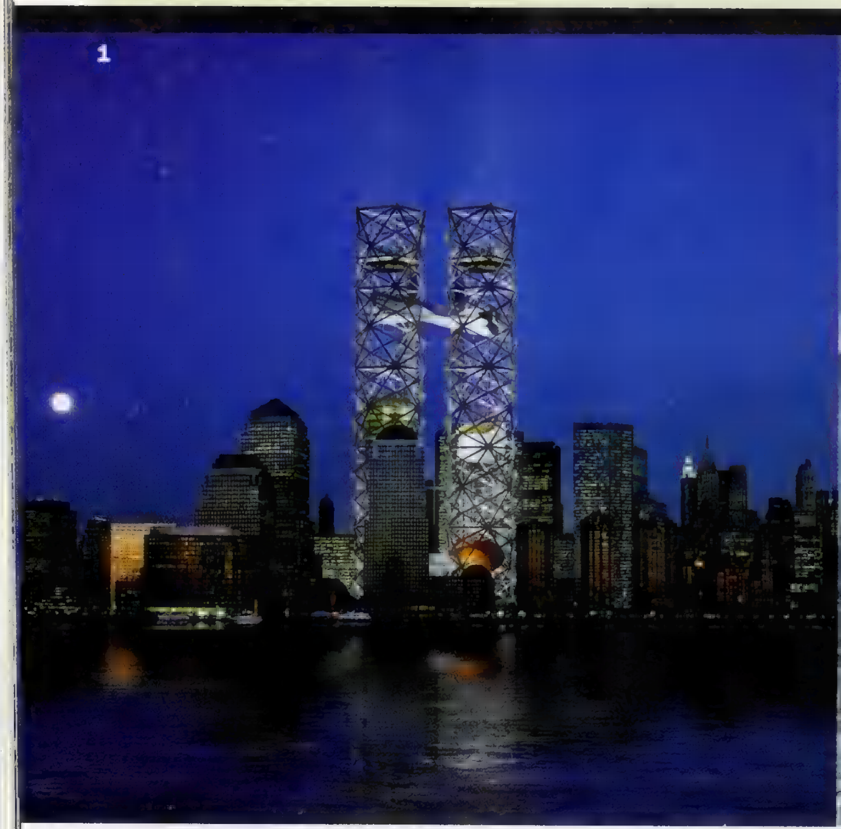
WTC twin towers were, respectively, 1,368 and 1,362 feet tall.

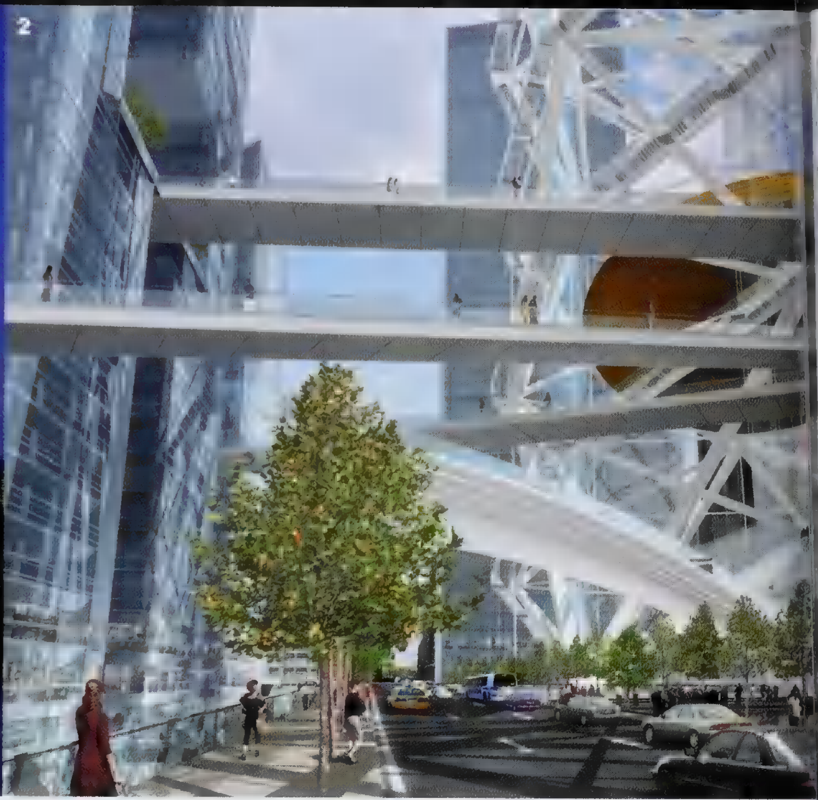
While the proposed towers are tantalizing, they are also distracting from what has appeared to be the key purpose of this charrette exercise, which was to formulate a potential land-use plan at the ground level. And while evocative in imagery, forms, and in the scale of the towers, a number of the proposals were noticeably vague on details such as square footage of uses, what the underground portions of the site would look like, and

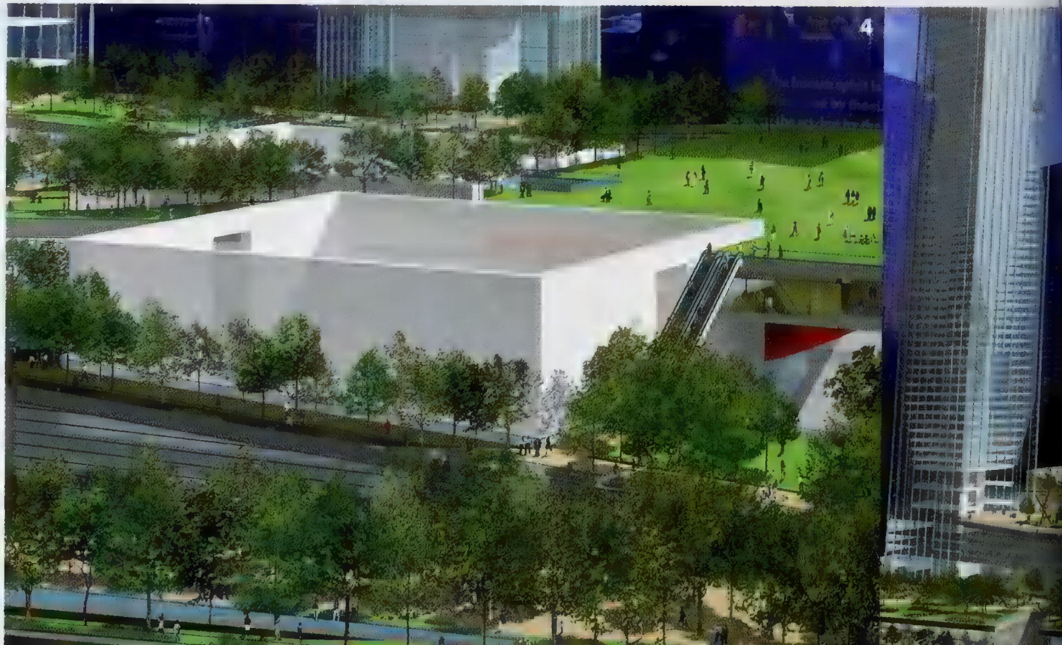
THINK
Rafael Viñoly Architects, Frederic Schwartz Architects, Shigeru Ban Architects+Dean Maltz, Ken Smith Landscape Architect, William Morrish, Janet Marie Smith, and Rockwell Group

This team, led by New Yorkers Viñoly and Schwartz, is the only one to develop more than one scheme.

- THINK developed three designs: World Cultural Center, Sky Park, and Great Hall
- World Cultural Center (1, 2, 3) has two 1,600-foot-tall open latticework towers with cultural facilities set within
- World Cultural Center towers (1, 2, 3) are built above and around the World Trade Center footprints
- Sky Park (4, 5), surrounded by three towers, is a 16-acre park above cultural facilities and a transit hub
- Great Hall (6, 7, 8) is a free-span, glass-enclosed, 13-acre public room adjacent to a 2,100-foot-tall tower
- With the Great Hall (6, 7, 8), two glass cylinders surround and protect the footprints of the twin towers







IMAGES: COURTESY THINK

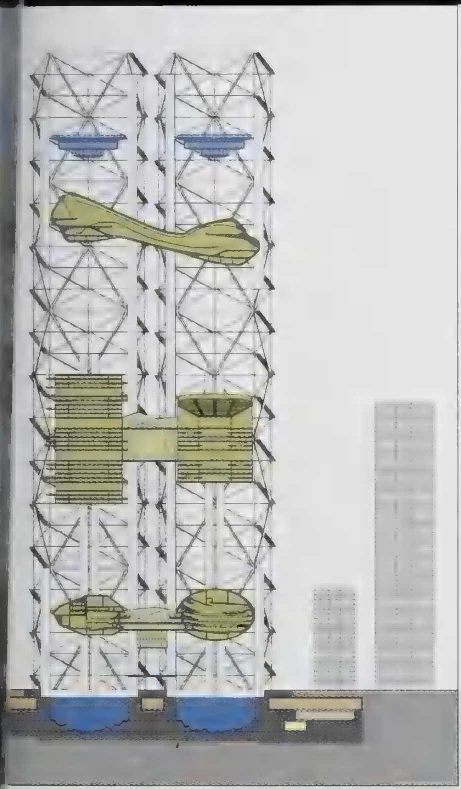
how a major transit station would be coordinated with the plan.

The nine proposals

The United Architects team, which includes Foreign Office Architects, Greg Lynn FORM, Kevin Kennon Architect, Reiser + Umemoto RUR Architecture, Imaginary Forces, and UN Studio, developed a proposal that would include the world's tallest and largest building: essentially five structures that torque and meet as one building with five floors of contiguous space at 800 feet above ground. United Architects conceived this as a sort of "giant cathedral" that is "a new kind of vertical city," according to the team. The team touts safety in this mammoth building, with 29 separate stairways that are connected by 43 safety areas of refuge. The memorial would reside in the vicinity of the twin tower footprints, and a Sky Memorial would look down on one of the towers.

Daniel Libeskind makes perhaps the most evocative use of the site's current condition: The slurry wall would be exposed on the west side of the site's foundation and a space for a memorial would be at this level, 70 feet below ground. Libeskind said, "The slurry walls are the most dramatic elements to survive the attack." Angular and asymmetrical buildings would ring the site, and the tallest would be a 1,776-foot-tall tower with gardens at the highest level. Libeskind's site includes two outdoor public spaces, the Park of Heroes and Wedge of Light. The Wedge of Light and surrounding buildings are positioned so that there will be unimpeded sunlight on September 11 each year from 8:46 A.M. (time of the first plane hit) to 10:28 A.M. (time of the second tower collapse).

The ambitious Think team produced three proposals (pictured on this spread). Led by Rafael Viñoly Architects and Frederic Schwartz Architects, Think included Shigeru Ban Architects + Dean Maltz, Ken Smith Landscape Architect, William Morrish, Janet Marie Smith, and Rockwell Group. One of their schemes, called World Cultural Center, has two 1,600-foot-tall latticework structures built above



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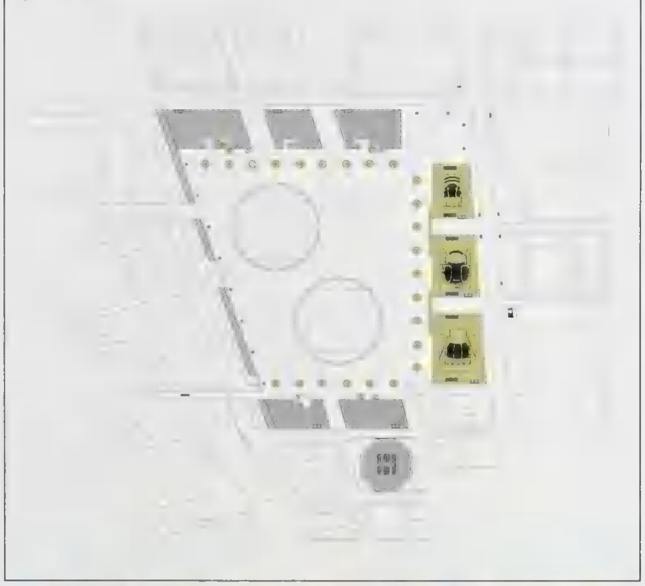

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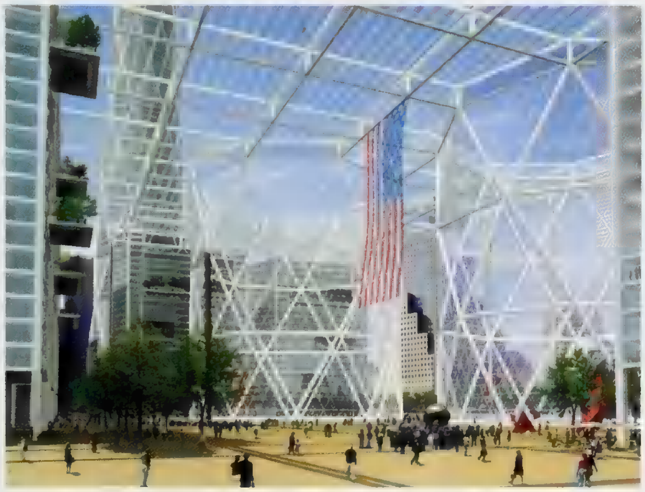

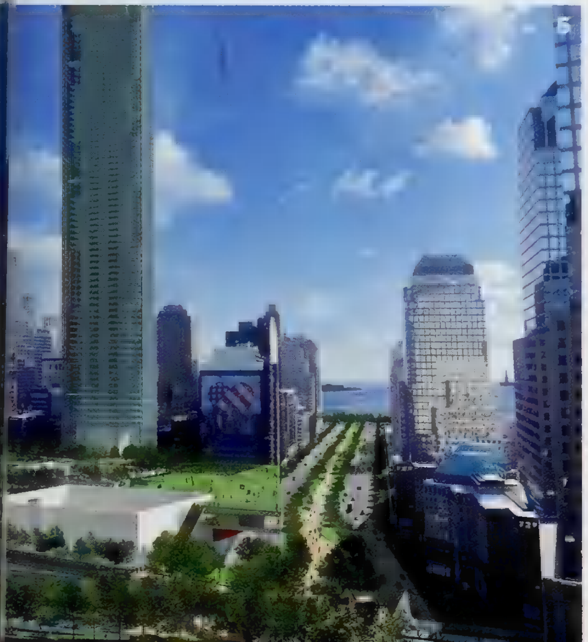

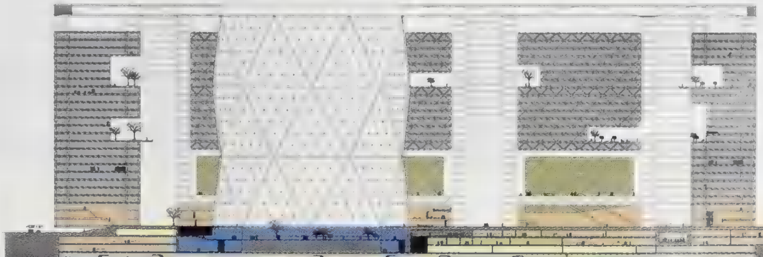

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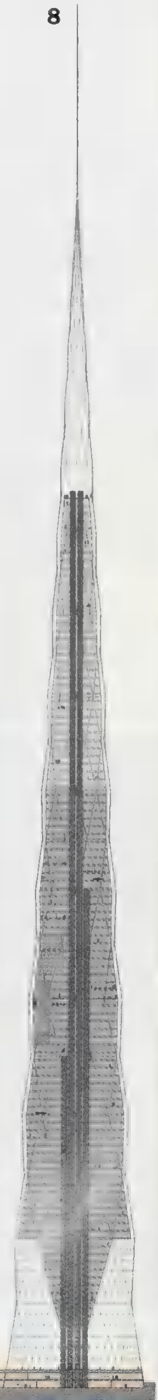

and around the footprints of the twin towers. Cultural facilities and a memorial would be embedded in the structures. Nine office buildings would be phased on the site, ranging in height from about nine to 60 stories. This scheme is the only one of the nine that does not require a tall building with offices to create the dynamic skylight element that the LMDC requests.

Think's Sky Park plan has three towers that could be any height, but the architects suggested towers of 70, 90, and 110 stories along the eastern

Foster and Partners

Following September 11, London-based Lord Norman Foster commissioned an expert multidisciplinary task force to conduct a study into the safety of tall buildings. The findings informed the Foster tower design.

- A "twinned" tower (1, 3) that "kisses and touches and becomes one," Foster explains
- Where the tower "kisses" at three points are public observation platforms and trees: parks in the sky
- Tower has 98 floors and is 1,764 feet tall: "the tallest, strongest, and greenest," Foster says
- Footprint of twin towers (2, 6) becomes site for memorial with monumental walls of steel and stone
- Foster considers three memorials: the tower voids, a 20-acre park (5, 6), and the new twinned tower itself
- The park (5, 6) extends to the Hudson River waterfront and Battery Park City, bridging over West Street
- A mass transit hub (4) connecting the PATH train, subway lines, and new airtrain links to airports
- Fulton Street and Greenwich Street will be extended (6)
- Liberty Street as a street market on the site (6)

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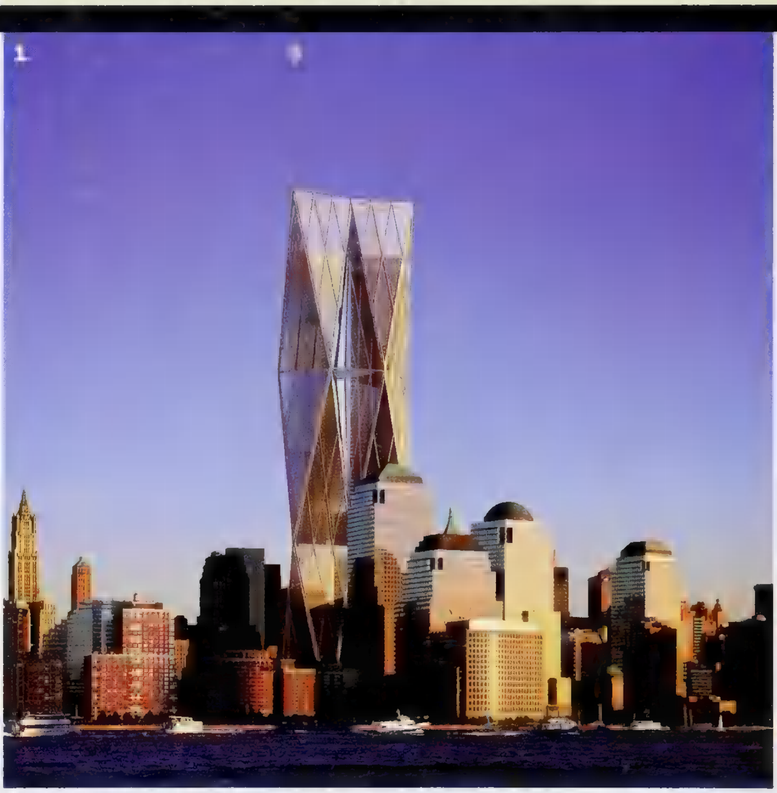

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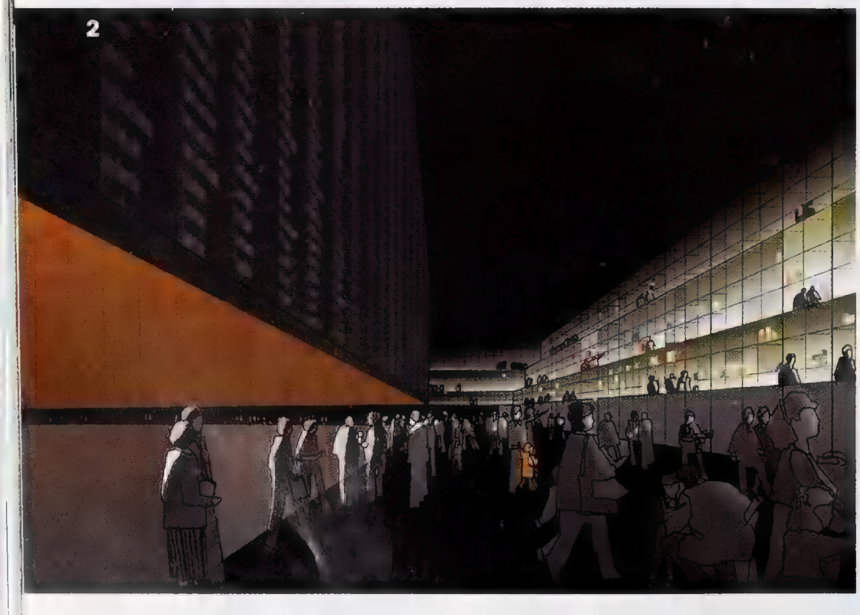

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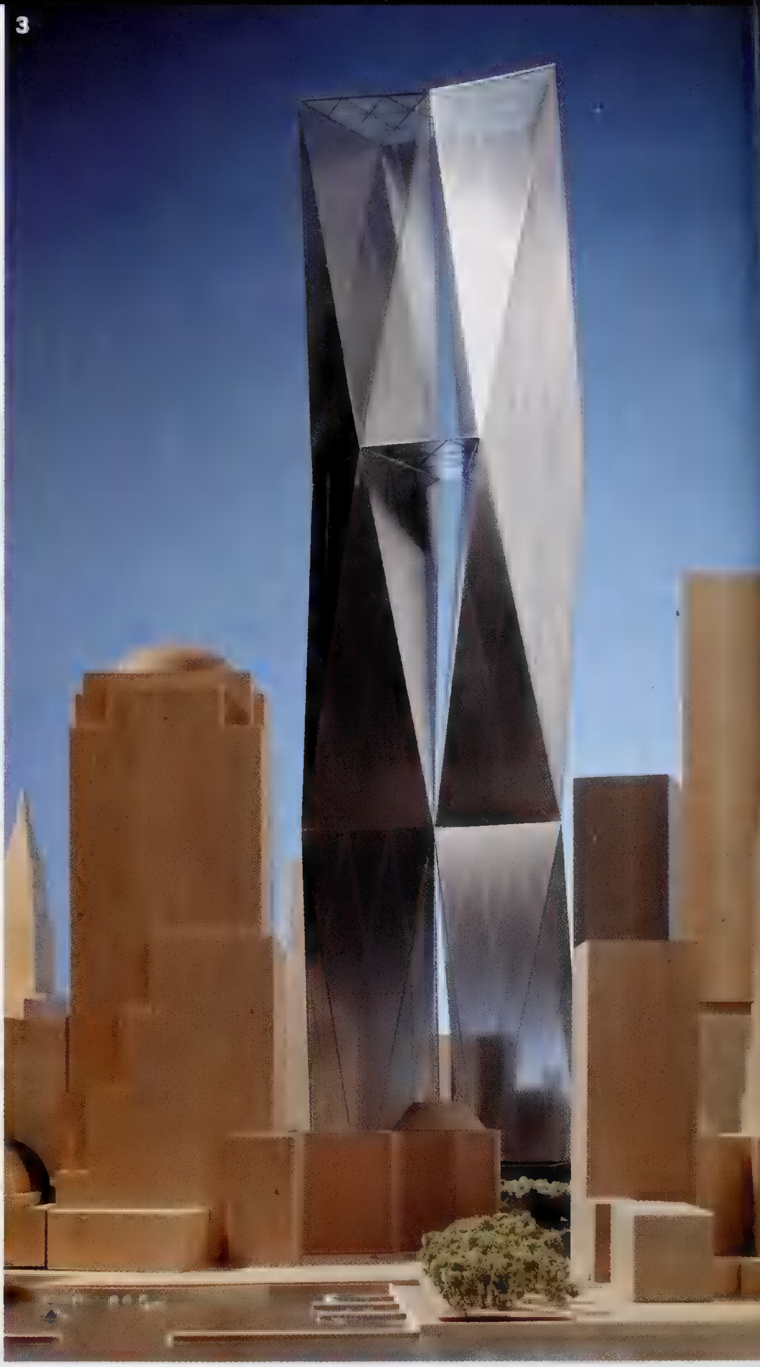

edge of the site. A 10-block, 16-acre public park with a 3-acre public green and amphitheater is 10 stories above ground level. The transit hub, as well as cultural facilities, retail, a hotel/conference center, and office space would all be under the park.

Think's Great Hall plan features a vast 13-acre, glass-enclosed public space that the architects call the Gateway to the City and the Great Hall of the Transportation Center—planned as the world's largest covered public plaza. The footprints of the twin towers, surrounded by glass cylinders, would be visible from the hall itself. At the southern edge of the site, a 2,100-foot-tall tower would include offices, a hotel, and a transmission tower. The architects would incorporate environmentally sustainable features into the Great Hall, although the details of how it would harvest electricity and use natural air to moderate the plaza's temperature were not spelled out.

Twinned tower that kisses

Foster and Partners created a proposal (pictured on this spread) that is dominated by what Foster describes as really one 1,764-foot-tall "twinned" tower that "kisses" at three points. At those points, there are public observation platforms containing green plants and trees. The tower features a dual skin for energy conservation, which Foster claims could provide natural ventilation 80 percent of the year. At the ground level, a park would bridge over West Street and connect to the Hudson River waterfront and Battery Park City. Walls of steel and stone would surround the footprint of the twin towers, which would remain empty voids.

Peterson/Littenberg's scheme has been called everything from the most "retro" or neotraditional to the most rational and understandable for a general audience. The firm's insider role in this exercise has been questioned, though, because the firm has been the LMDC's in-house urban designer for nearly a year and has also worked with Mayor Bloomberg to draft his "Vision for 21st-Century Lower Manhattan," unveiled in December 2002 [RECORD, January

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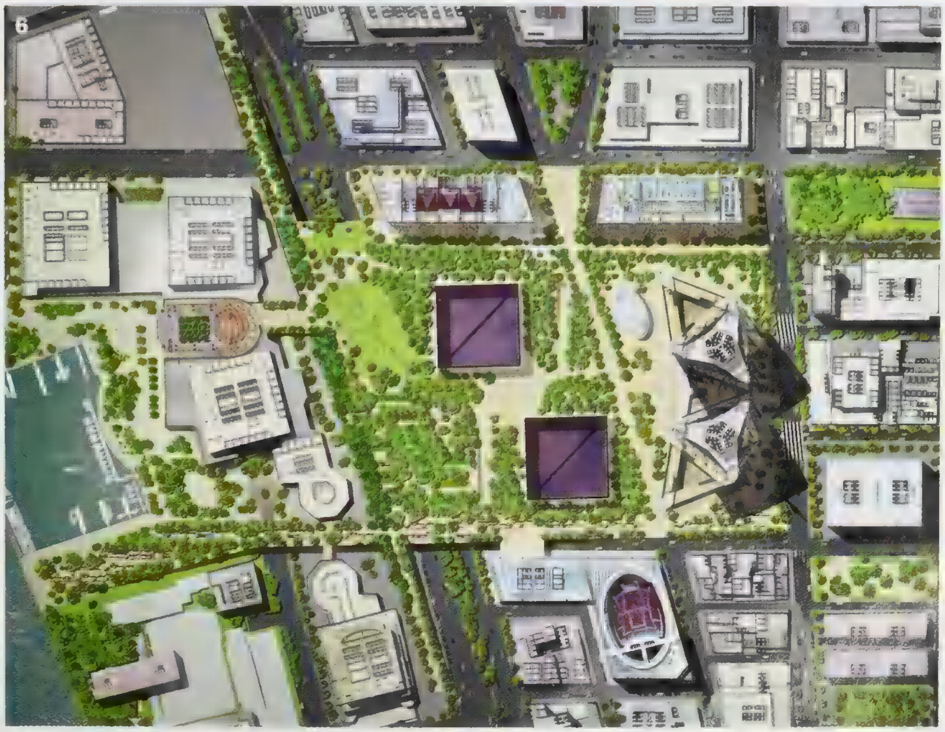

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Peterson/Littenberg Architecture and Urban Design

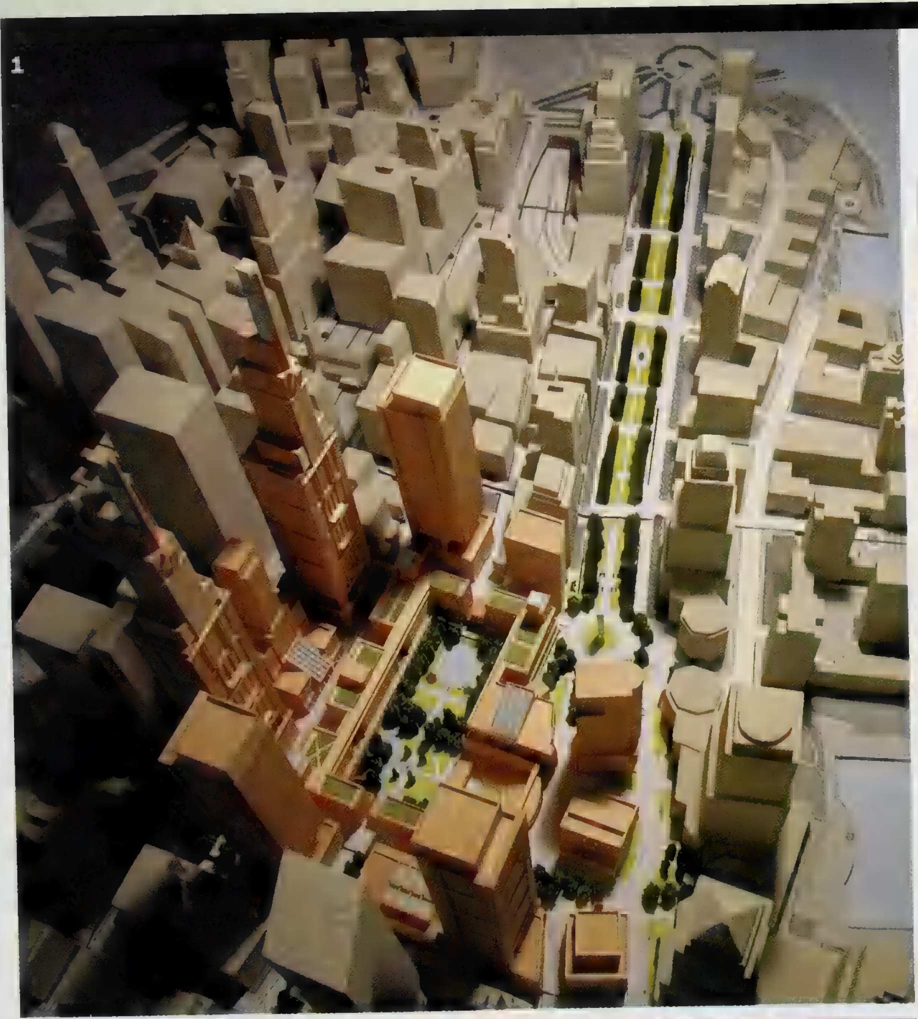
New York–based Peterson/Littenberg, led by Steven K. Peterson and Barbara Littenberg, has been an in-house urban design firm for the LMDC since spring 2002 and was not selected in the international competition.

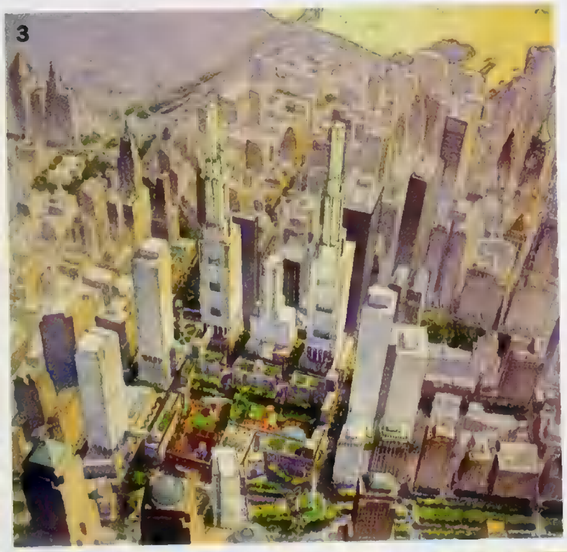
- Scheme has seven towers (1, 2, 3) surrounding gardens. The two tallest towers are 1,400 feet tall.
- Garden (4), sunk below street level, is a walled enclosure
- Public garden with an amphitheater in the footprint of the north twin tower
- Amphitheater has 2,797 seats—one commemorating each of the September 11 victims
- Museum is underneath the amphitheater, and main transportation building is between two tallest towers (1)
- West Street (1, 3) is a boulevard extending south to Battery Park
- Features 1.8 miles of new street frontage and 17 city blocks (1)
- Four theaters, a library, a school, and 500,000 square feet of housing included
- Includes one million square feet of retail and 8.5 million square feet of office space

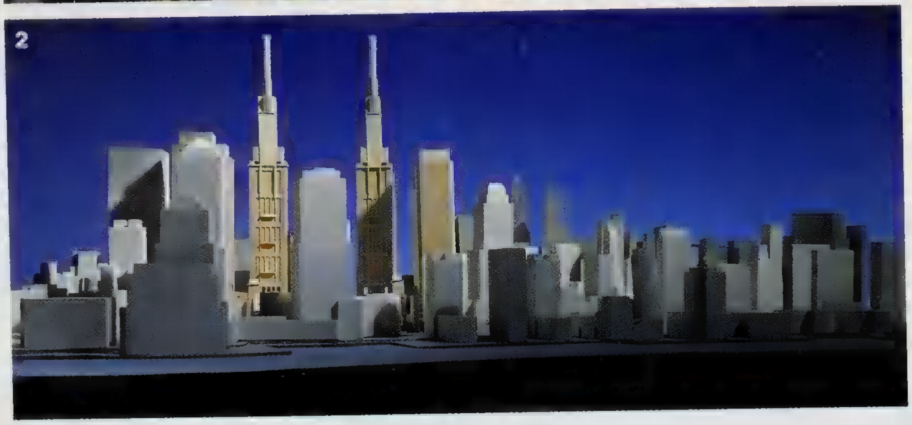
(continued from page 39)

2003, page 36]. Still, the firm has its supporters. Daniel Henninger, a *Wall Street Journal* editor, suggested in a December 20 editorial that Barbara Littenberg be put in charge of the planning process.

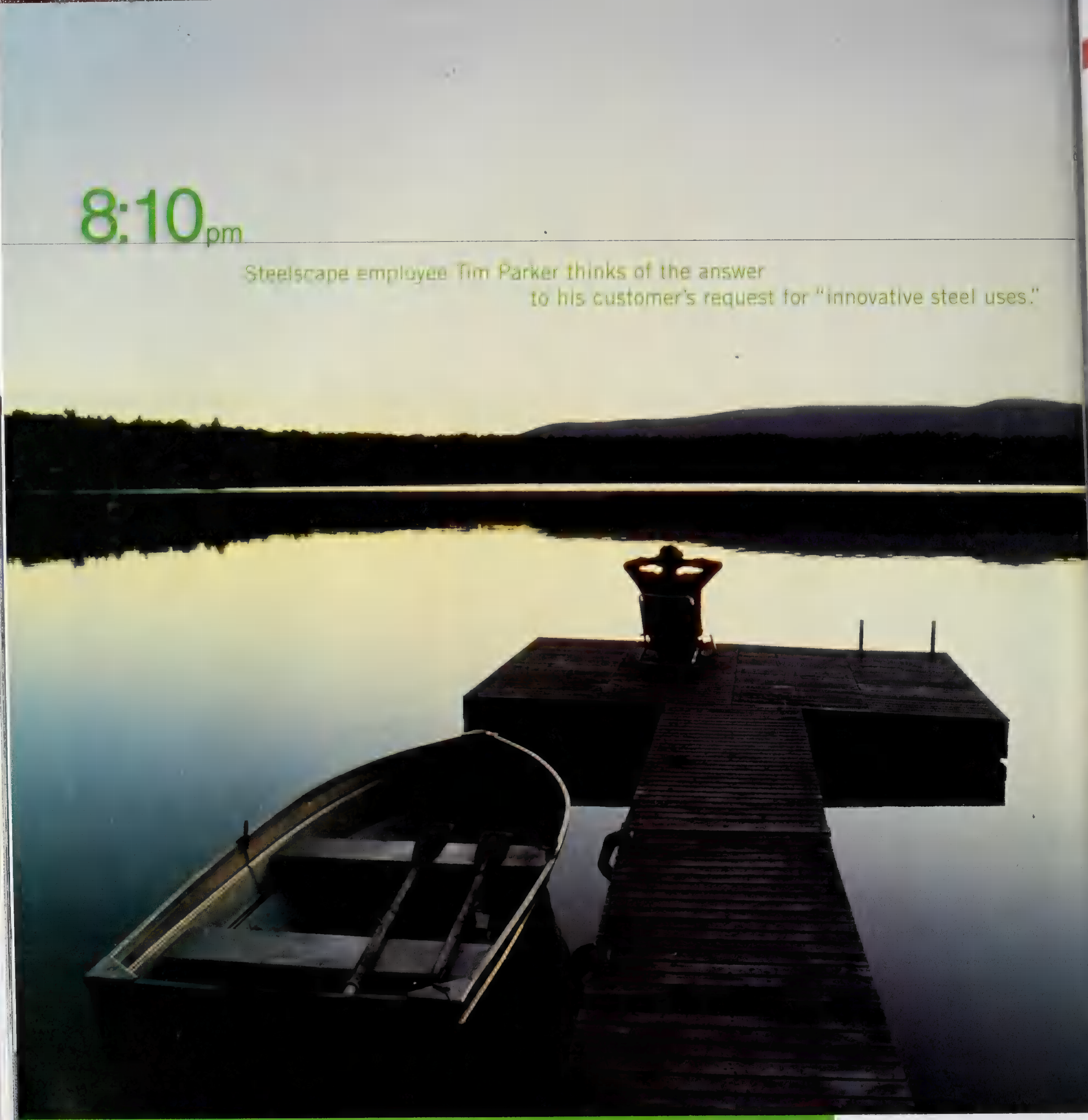
The Peterson/Littenberg plan proposes seven towers surrounding memorial gardens. A transportation center sits between two 1,400-foot-tall towers on the eastern edge of the site. An amphitheater with 2,797 seats—one commemorating each of the victims—will be in the foot-







MICHAEL MCCANN RENDERING (RIGHT, TOP AND BOTTOM); (BOTTOM LEFT)



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Skidmore, Owings & Merrill (SOM) with SANAA, Iñigo Manglano-Ovalle, Rita McBride, Field Operations, Michael Maltzan Architecture, Tom Leader Studio, Jessica Stockholder, and Elyn Zimmerman

SOM, which has designed the new 7 WTC tower for Larry Silverstein, worked with a team that included Field Operations, led by Stan Allen and James Corner, as well as a variety of artists.

- A dense grid of nine vertical structures (1, 5) that are all 940 feet tall
- Towers (3) will function as heat exchanger and actually contribute power to the city
- Gardens (4), 16 acres in total, at the top of each tower
- Various people-movement systems and terraces, multiple ramps on site (3)
- A reflecting pool with bridges is over the twin tower footprints; a light-filled transit hub (2) is integrated

(continued from page 41)

print of the north WTC tower.

SOM conscientiously put together a team that included mostly emerging voices in art, architecture, and landscape architecture. Their design called for nine buildings, each 940 feet tall with gardens at the top. The buildings would be connected by multiple ramps and people-movement systems.

The team of Meier, Eisenman, Gwathmey, and Holl attempted to express the sublime in austere building forms and landscape. The

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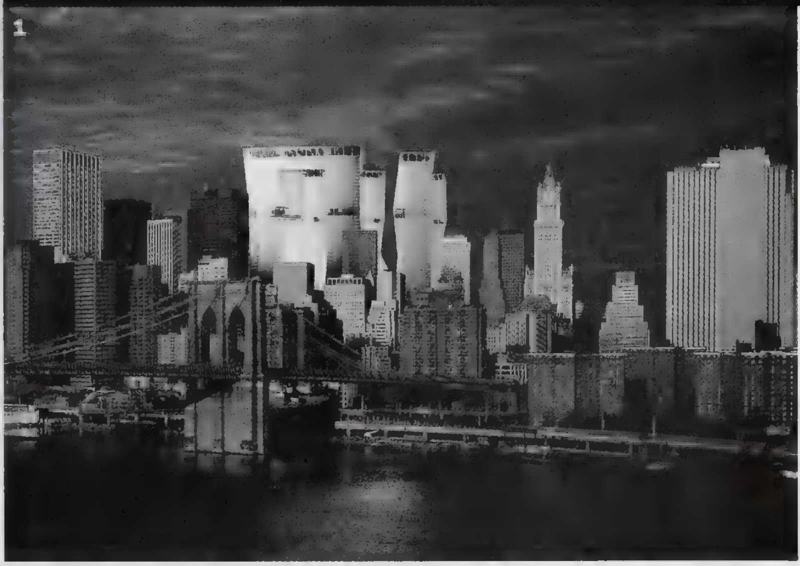

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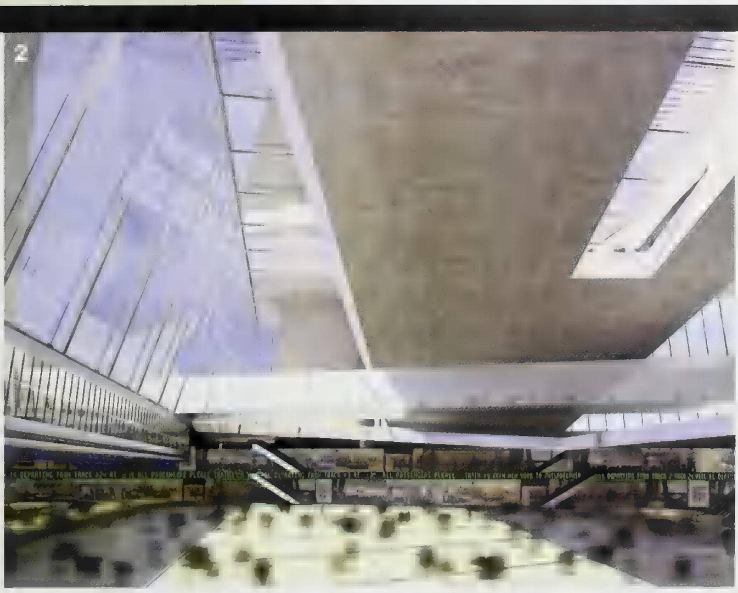

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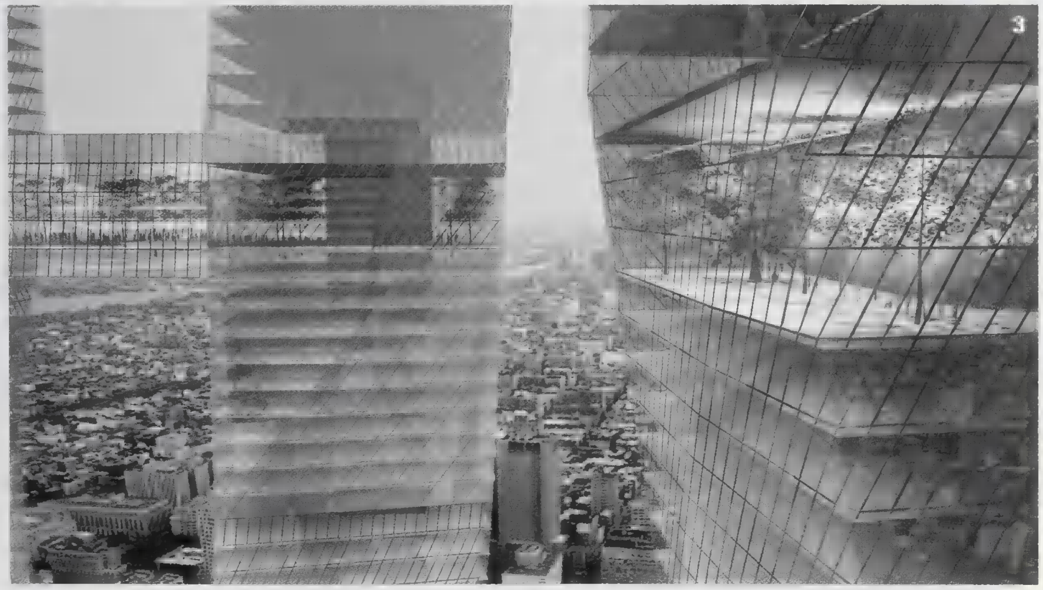

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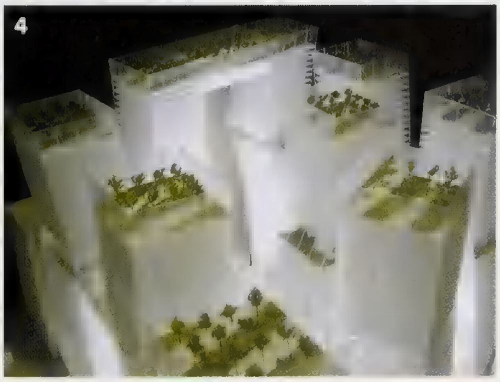

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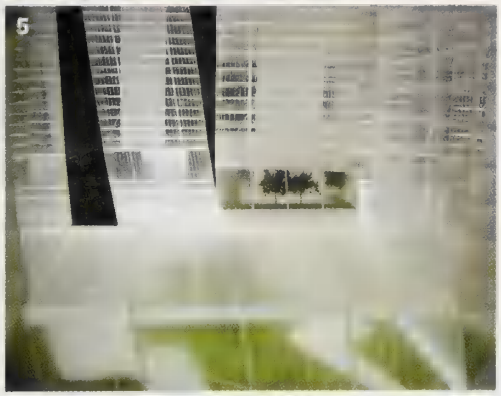

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Richard Meier & Partners Architects, Eisenman Architects, Gwathmey Siegel & Associates, Steven Holl Architects,

At the December 18 unveiling, Meier began his team's presentation by saying: "Ladies and gentlemen, we're the New York team. Some may also say we're the dream team, but we're very real."

- Two hybrid buildings (1, 2, 5) that rise 1,111 feet each; footprints occupy about 25 percent of the site
- Nine million total square feet of space for office, retail, hotel, convention, and cultural uses
- Interconnected "superfloors" (4) have large continuous floor space suitable for conventions, trading floors
- Buildings employ PV cell technology in wall to capture sunlight during the day and emit glow at night (3)
- Multiple memorials; twin towers footprints are shallow glass-bottomed reflecting pools (5)
- Final shadows cast by the towers delineated with special paving and dense linear rows of trees (5)
- At the top of the Church Street building is a memorial chapel and landscaped memorial observation terrace

(continued from page 43)

self-described "New York team" proposed two 1,111-foot-tall hybrid buildings with interconnected "superfloors" that have large, continuous space for conventions, trading floors, or other events. PV cell technology would be embedded in the exterior to capture daylight and emit a glow at night. On the ground, the twin tower footprints would be shallow, glass-bottomed reflecting pools, and the final shadows cast by the twin towers would be delineated with tree-lined extensions into the Hudson River. ■

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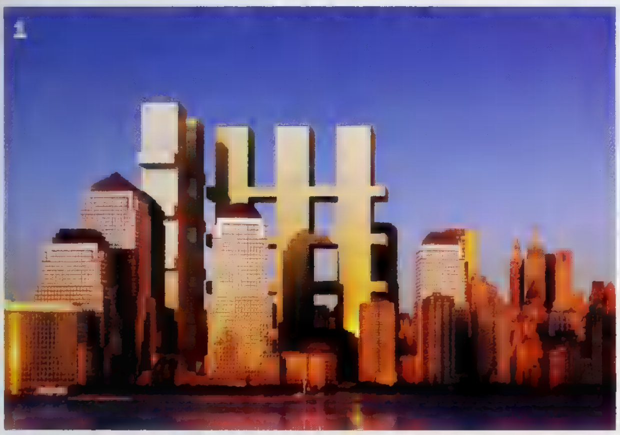

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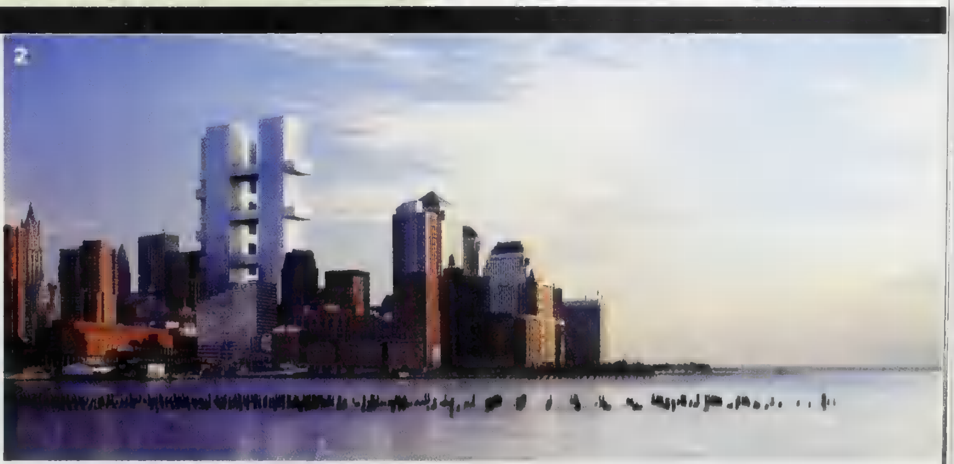

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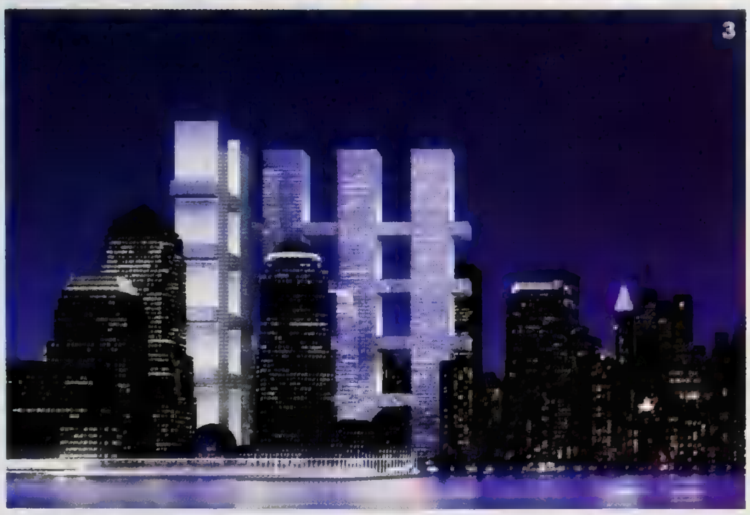

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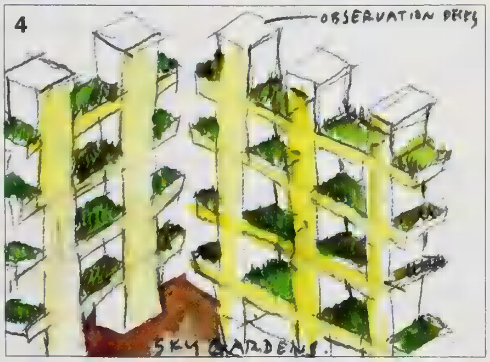

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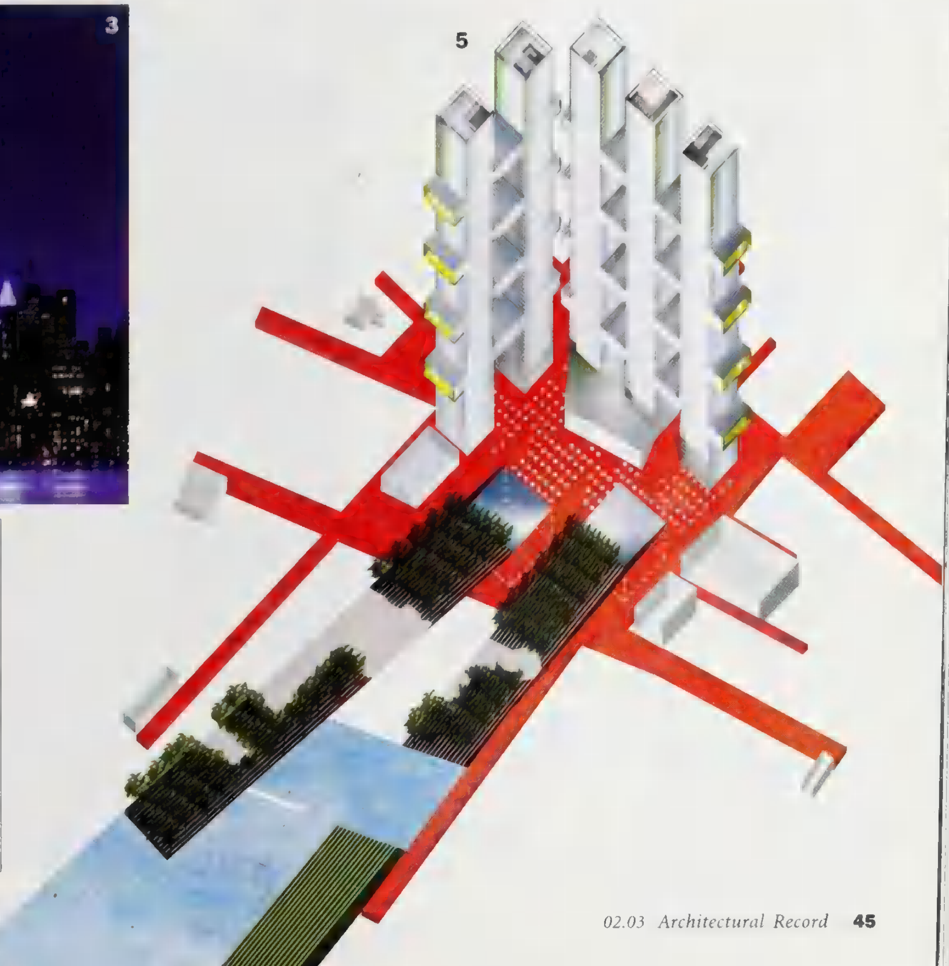

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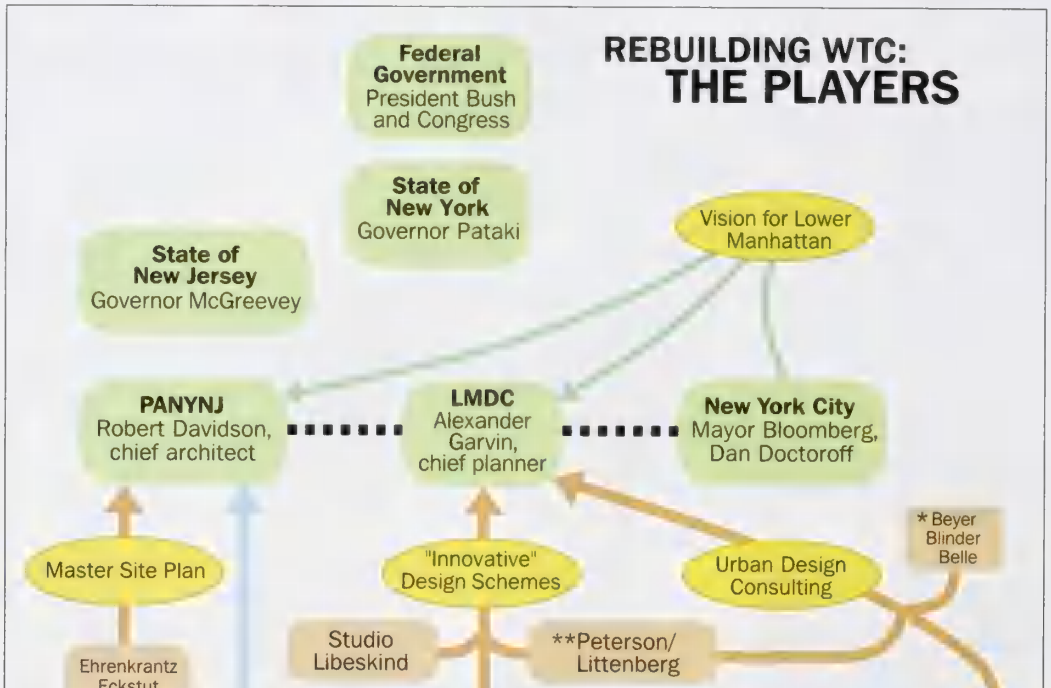
A Defining Moment for Architecture

ANALYSIS: Nine designs challenge New York to express the nation's values in the rebuilt WTC. Will it rise to the occasion?

By James S. Russell, AIA


REBUILDING WTC:
THE PLAYERS
Federal Government President Bush and Congress
State of New York Governor Pataki
State of New Jersey Governor McGreevey
Vision for Lower Manhattan
PANYNJ Robert Davidson, chief architect
LMDC Alexander Garvin, chief planner
New York City Mayor Bloomberg, Dan Doctoroff
*Beyer Blinder Belle
Master Site Plan
"Innovative" Design Schemes
Urban Design Consulting
Ehrenkrantz Eckstut & Kuhn
Studio Libeskind
**Peterson/ Littenberg
THINK Shigeru Ban Frederic Schwartz Ken Smith Rafael Viñoly Arup Buro Happold Jorg Schlaich William Morrish David Rockwell
SOM+ Field Operations Tom Leader Michael Maltzan Neutelings Reidijk SANAA Inigo Manglano-Ovalle Rita McBride Jessica Stockholder Elyn Zimmerman
Weiss/Manfredi
Robert A.M. Stern
Smith-Miller Hawkinson
Silverstein Properties
*SOM
United Architects Reiser+Umemoto Foreign Office Architects Greg Lynn FORM Imaginary Forces Kevin Kennon UN Studio
Richard Meier+ Charles Gwathmey Peter Eisenman Steven Holl
Brookfield Properties
*Cooper Robertson
Foster and Partners
Westfield America
Federal Government
KEY
Government
Architect
Tenant
Rebuilding agencies
* Contributed to July plans
** July plans and Vision for Lower Manhattan

Who is in charge? The muddy prognosis for the Trade Center rebuilding plans stemmed from a byzantine array of stakeholders and a lack of political leadership to set goals and create clear lines of authority.

As the seven teams of architects presented their schemes on December 18, 2002, the event was beamed live to television audiences worldwide. It appeared on front news pages everywhere the next day. The Lower Manhattan Development Corporation's (LMDC) Web site (renewnyc.com) was hit 6 million times in the following two weeks. As many as 70,000 people visited the exhibition of the plans in its first three weeks and dropped off 4,000 comment cards.

In short, the architectural plans for the rebuilding became an international media and popular phenomenon, unprecedented in architectural history. The uniqueness of the moment was not lost on team members, who, along with colleagues and well-wishers, celebrated the presentations a day later at a reception in the Winter Garden of the World Financial Center, where the ideas were exhibited. Relief at the end of an eight-week charrette was mixed with jubilation at the generally positive reaction to the proposals. The presence of architect-shunning government-agency heads and real estate developers underscored the significance of the event. At no other architectural exhibition could one imagine WTC leaseholder Larry Silverstein schmoozing with architect Daniel Libeskind. The normally courtly Alexander Garvin, LMDC's chief planner, ecstatically hugged startled design-team members.

It seemed, on December 19, that an architectural Rubicon had been crossed. Garvin gloried in the fact that at last the potential of architecture and urban design had earned a respected place in the redevelopment process.

But this apparent triumph of the visionaries may only have brought to the forefront a battle of philosophic aims that has dogged the rebuilding from the beginning—a conundrum much larger than the staggering complexities of the site. The question is no less than whether and how the city chooses to use architecture as a public investment in its future and to express and nurture its citizens' ideals.

Progressive vs. quotidian

In the nation, and even the world, these questions perpetually simmer below the surface, but the controversy-dogged rebuilding process keeps boiling them over. One side of the divide is represented by the ideals that motivated the "innovative" (LMDC's term) teams' work: With the exception of Peterson/Littenberg, they aspired to what *New York Times* architecture critic Herbert Muschamp calls "progressive" notions of high design that attempt to inspire through a future-oriented aesthetic that is socially and technically innovative. These values were expressed in intentionally spectacular architecture that would use advanced construction techniques and building technology.

Recognizing the enormity of the attacks calls for such an unprecedented response, the teams' work collectively argued. The aesthetic expression of progress has always denoted (however naively) the potential evolution of human character toward a more responsible, egalitarian ideal—offering a reproach to the terrorist attackers. The "progressive" schemes included millions of commercial square feet, as requested, but proposed, in a startling variety of ways, to give prominence to public space, commemorative space, symbolic space, and spaces and forms representing public ideals. Far more than aesthetic exercises (as has been frequently asserted), this commitment is the key difference from the "pragmatic" redevelopment schemes presented last July.

The inclusion of the Peterson/Littenberg team was intended to mollify critics of the "progressive" approach, who see it as ignoring the tried and true means of citymaking: the constant evolution of a widely accepted language and aesthetic of building. Doesn't a city's unique sense of place, they argue, derive from a street, block, and building pattern that is understandable, incremental, quotidian, consistent?

Peterson/Littenberg's plans also gave enormous attention to public ideals and public space, proposing, for example, to extend a tree-lined visual axis south along West Street from the site. But they see the perpetual search for the new and different not as moving society out of a difficult present into a better future but as empty innovation for its own sake. Do we need—as Barbara Littenberg argued at the RECORD-sponsored January 7 forum on the plans, called *Waiting for Ground Zero*—to repeat the mistakes of the Modernist past perpetrated by hubristic, architectural gigantism?

Akin to the aesthetic divide is a pragmatic one: In America, where cities are built by market forces, do we dare put in place a plan that requires developers to depart—at times radically—from the rigidly prescribed spec-building criteria that have evolved over the past 20 years?

It is clear that many people involved at the Trade Center site, whatever their leanings, view the way the rebuilding plays out as possibly redefining architecture in the American public realm. These opposed approaches to rebuilding represent "a real crisis for architecture," says Littenberg.

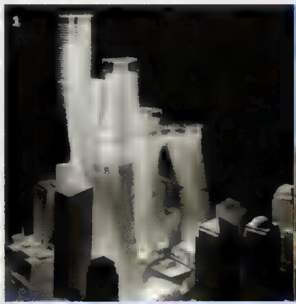
And it is, perhaps, one for planning and urban design, as well. Because what looks to many observers like a spat about style—progressive versus neotrad—may portend reshuffled roles for once-discrete disciplines.

Planning vs. architecture?

The Port Authority of New York and New Jersey and the LMDC promised to deliver at least a street and parcel plan, with bulk guidelines, this month. Taking the work of the innovators into account has turned this task into a minefield, however. So many of the plans entail "polar opposites," Garvin says. Foster's plan leaves the tower footprints off-limits to visitors, while United Architects "want you to walk in and look up and have the sense of a future city," he explains. Commemorative opportunities abound in the scheme designed by a team led by Richard Meier. Libeskind has carved the largest memorial precinct of all, focusing on the slurry wall that kept the Hudson River at bay as the towers collapsed.

Plans by United Architects and Foster and Partners integrate the office-building concept closely with a transit hub. Several designs require raised plazas to bridge

CRITICISM: What Works and What Doesn't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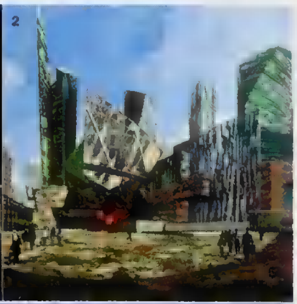
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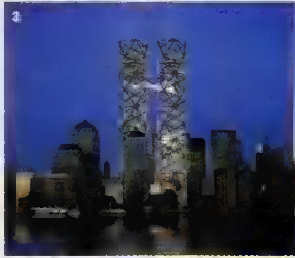
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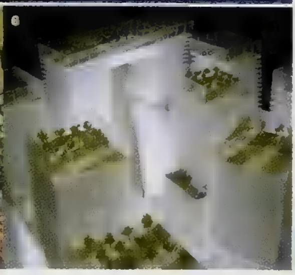
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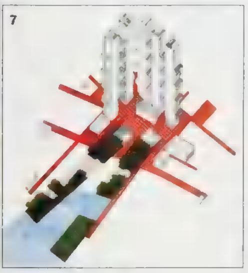
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A lot of people thought contemporary architecture was too cool and self-absorbed to contend with loss and that it had no language for inspiration. The plans presented December 18 changed all that. Two of the most vexing aspects of the schemes—their memorial proposals and their tall buildings—tested assumptions that have congealed into orthodoxy over the months.

Honoring the extent of loss in this tragedy has turned the memorial into the planning linchpin. Each team raised questions about the memorial even as they offered compelling visions for it.

Peterson/Littenberg drew up a pedestrians-only commemorative precinct, separated from daily city life by a layer of buildings and a high wall (image 5). Foster's plan erects a high wall around the footprints and accesses the bedrock 70 feet below by a monumental ramp system. It seems a good idea to remove the distractions of the city, to carve out a dignified, contemplative space. But can this void interrupting the daily life of the city be seen as anything but a scar? Can such a monumental place offer a message transcendent

IMAGES: COURTESY THE ARCHITECTS

West Street, tying the long-isolated Battery Park City and the waterfront back into the fabric of Lower Manhattan.

These strategies reflect a notion in many of these teams' minds that the architecture is the urban design. Libeskind says, "This takes New York and architecture where it needs to be—which is not separating urbanity from architecture. I think this is a change that has been brewing for some time. But here it looks explosively new." Indeed, in Europe and Asia, architects are frequently commissioned to do what in the U.S. would be classified as city planning or urban design.

Littenberg, who also worked on the discarded July plans, still feels strongly that "it doesn't matter how much architecture you throw at the site, you have to figure out the essential orientation to open space and the existing urban fabric. We assert that urban design happens before architecture."

Doing the urban design first is precisely the task Stan Eckstut has set for himself. As part of the ever-more byzantine interrelationships among stakeholders (chart, page 46), the Port Authority hired his firm, Ehrenkrantz Eckstut & Kuhn, to draw up the master plan for the site, in cooperation with LMDC's Garvin.

Eckstut is working with the same program the architects did, and he feels confident he can create a plan that would accommodate numerous future possibilities. "I am guided by principles," he says. "The context, first. We're recognizing the best of what's there, and interpreting what New York is. We're defining a system of public spaces and creating a distinct sense of place." And, he adds, "I'm not looking for a singular work of art."

Libeskind, for one, is not buying it. "Urban design done by a faceless office in the shadows doesn't make much sense to me. We are in a world of grown-ups and professionals. Only a bold decision will empower the citizens of New York to create a civic space to match their aspirations."

How bold can plans be?

Just how assertive or symbolic the rebuilding should be remained unanswered as Eckstut and Garvin rushed to create their plan. "In this ballet of billions, the pubic must decide what it is owed," observed Rafael Viñoly, member of the team called Think, at RECORD's forum. His team's three schemes represented three different levels of public commitment, from largely commercial to almost entirely cultural. None of them, added team member Fred Schwartz, "depend on office buildings to have meaning or as an iconic image."

The Think scheme offered a resonant response for those who believe it was not just people and buildings that were attacked, but ideas and values. Think's three schemes most clearly framed the all-important question: How are the aspirations of the public to be represented? "The apparently irreconcilable desire for memorial space and city life is a spur to architectural invention," said Stan Allen, of the SOM team, which creates the opportunity to devise "a city not yet imagined."

What would turn this "opportunity" into a necessity? The most provocative scenarios are certainly risky. But failing to make a calculated bet on the future may no longer to be an option. Given the amount of vacant space available in New York, real estate analysts have predicted that the square footage lost in the towers won't be needed for anywhere from 10 to 30 years. The real estate industry secured a federal guarantee of a whopping $5 billion in incentives for tenants willing to locate in Lower Manhattan. They are going begging.

One-way "dialogue"

What bets to make nowadays must inevitably involve the public. Officials enough to retain its hold on us as the terror attacks inevitably take their place in history?

In respecting the 200-foot-square footprints of the twin towers—another planning consensus—and drawing the inevitable linkage between them, several designs created a very large and monumental precinct that would be off-limits to almost anything but the commemorative program. That expansiveness, in turn, stymied efforts to more gracefully thread the rebuilt site into the surrounding network of streets and blocks. It's why the site remains a distinct enclave in most of the schemes. And it's why you see big open plazas in schemes by Foster, Think (the Sky Park variation), and United Architects. The Meier Eisenman Gwathmey Holl team actually defined the memorial precinct as even larger, stretching it up into gardens in monumental openings high above the street and fingering it out across the Battery Park City development and into the Hudson River (image 7). Studio Libeskind's scheme rejects the footprints in favor of exposing the length of the "heroic" slurry wall that held back the Hudson River as the towers collapsed on top of it (image 2).

We should beware of a commemorative battle of the biggest. It should not be surprising that survivors would define significance in terms of size as well as in the use of ruins. This is what happens in the absence of a sensitively led design dialogue.

Designers have learned from experience that significance is best conveyed by art and design, not size. Landscape architect Diane Balmori, who accompanied Ground Zero stakeholders on a tour of Berlin monuments, was particularly moved by a Holocaust memorial that involved only the painting of vanished Jewish owners' names on building stoops.

To its credit (and with the involvement of designers), the LMDC committee that developed a draft mission statement for the memorial did not demand that the footprints be retained, only respected. Artifacts from the destruction need only be considered for inclusion, it added. Too bad the mission statement came too late to inform the program that was given the seven architect teams.

The teams also demonstrated the validity of other memorializing approaches. By extending the precinct of the historic St. Paul's church into the site, a pocket park by SOM suggests a commemorative possibility that is both moving and authentic (image 6). Since September 11, 2001, the historic church has offered spiritual solace and physical respite for rescuers, victims, and volunteers.

Great ideas, sure. But how to advance key rebuilding decisions while keeping commemorative possibilities open? A series of charrettes or competitions could help everyone understand what is possible on small or large sites, and a clear approach may emerge that does not entangle future possibilities for the entire site. Such an approach would also permit the city to wait longer for its realization. Waiting may seem cold-blooded, but priorities change as grief evolves, and a clearer view of what this memorial should say and how it should deal with the unique senselessness of the tragedy will emerge over time.

Do we really need another world's tallest building downtown? Foster's proposal alone won over many skyscraper rejectionists with its haunting elegance (image 4). It is the most beautiful he has ever done—and beauty counts in restoring the terrible gap in the skyline. Foster's approach recognizes that if you want to set aside a great deal of the site for a memorial and still accommodate a lot of office square footage, a super-tall building is not an unreasonable answer. I am not among the naysayers who think it will take a decade or more for downtown to support significant new square footage. Strategic invest-

Criticism *(continued on page 50)*

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continue to tout a public process that is based largely on one-way communication via public hearing and exhibition comment cards. Both LMDC and the Port are loath to subject their latest round of schemes to the large-scale "electronic" town meeting that so embarrassingly repudiated the July plans. But neither have they proposed the kind of interactive dialogue that would help people sort through the dizzying range of issues the designs engage.

Officials have also closely held plans for the most costly aspect of the rebuilding: public-transportation improvements. Port and LMDC officials were still working on a transportation plan in mid-January, entirely out of public view. A range of options has been proposed by officials and interest groups, some of which would require new river tunnels and new stations at the site or elsewhere in Lower Manhattan. Funds currently available would not go far in completing the most ambitious plans, which would cost tens of billions of dollars. And yet the mayor and business groups adamantly proclaim substantial mobility improvements to be key to revitalization. Having learned a lesson from the December plans, the Port now pledges to search for an architect of international stature to design the transit hub.

Because Eckstut and Garvin promised to deliver the urban-design strategy only weeks after the nine designs were released, the same volunteer organizations that pushed greater public dialogue in July have been presenting their own meetings and forums. The plan's abbreviated schedule "is a bit suspicious," commented AIA New York chapter executive director Ric Bell. It is possible that a better methodology will evolve to serve the public's voice out of this free-for-all, but the cynical use of its many noisy constituencies is a New York specialty. The public treated LMDC's January public meetings as window dressing and stayed away in droves.

Neither Eckstut nor Garvin could say by press time how the work of the seven December teams would be incorporated into the Eckstut plan. "We hope to go ahead with one of the schemes," Garvin said. "But it's a very difficult decision to make." An understatement.

Rallying round—what?

"The Port is trying to get everyone to have consensus around one plan," says Eckstut. Though the agency lost many of its own employees in the disaster, Eckstut said that it did not envision a scheme proceeding that the primary leaseholders—Silverstein Properties (for the offices) and Westfield America (for the substantial retail space)—"don't buy into." The Port expects the existing leaseholders to rebuild largely that which was lost and in pretty much the same way that commercial space is always built—even as the success of the "innovative" study seemed to make business-as-usual untenable.

The leaseholders have not publicly embraced the work of the teams, and if history is any indication, they won't find any of the seven teams' "boldness" sellable. Tenants, it is assumed, will drive the rebuilding to the conventional inspiration-free norm that prevails in what is probably the most innovation-averse industry in America. Indeed, no developer has stepped forward to map a marketworthy approach that would as well represent the public's interest in a powerful gesture.

"I reject the notion that these plans are unfeasible," said Richard Kahan at RECORD's forum. A veteran of government and semi-public agencies akin to LMDC, Kahan claimed, "The program that applies to the site today is arbitrary, driven by the Port and by developers who signed a piece of paper weeks before the disaster. This is correctable." But, he added, "You can't do this without a great client in the mold of the Rockefellers at Rockefeller Center."

To get a plan that recognizes not only the way the disaster affected Lower Manhattan but New York City and the region as a whole "will require the expenditure of someone's political capital," says Alexander Washburn, a veteran of many intergovernmental battles. Kahan thinks "the city and the mayor should take over the process" from the purse-string-holding but so far absent governor. Even with strong leadership, harnessing the enormous public concern will be no easy feat. Failing to do so could imperil the rebuilding. ■

The teams presenting their rebuilding designs in the restored Winter Garden at the World Financial Center, with its view of the disaster site.

ments must be made (in transportation, in the mix of uses, in the environment) and a business case must be developed. (Is the city working on this?) But larger business trends favor Lower Manhattan.

Real estate experts say the low-energy, high-amenity buildings Foster has built in Europe can't work financially in America. Give Foster the chance to prove them wrong. We already know the proposed tower could be the most technically sophisticated skyscraper on earth. Its triangulated form contributes to a uniquely strong structure with the kind of redundancy tall-building critics seek.

Let United Architects refine its skyscraper scheme, too. It's less radical than it looks (image 1). Its floor plates respect current leasing norms; its largest floors will even accommodate the financial-business trading arenas that turn normal office buildings into windowless, overbearing behemoths. It's easy to pooh-pooh the skygardens and streets-in-the-air as architects' fantasies, but if such a large building can succeed, it will do so by offering daylight, views, and other humane amenities lacking in the disfiguring generic developer boxes that litter the neighborhood. With twisting haunches hoisting its great bulk high, the surrounding streets can flow into a rich multi-level topography of plaza, stores, and rail station. Akin to Grand Central Terminal, it choreographs urban spectacle out of the everyday movement of people.

It's not wrong to engage, say, three of these teams to revise their designs based on public comment and realistic analysis. If the December plans demonstrated anything, it is the power of an architecture of passion and commitment to involve people in testing and sorting out ideas. Nothing else about the process has so engaged people in questions that range from the prosaic to the wrenchingly personal. So pick up that phone. And pay the teams decently this time. *J.S.R.* ■

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OFF THE RECORD

Seattle landscape architecture firm Gustafson Partners, [illegible] Kathryn Gustafson, in collaboration with Boston's Wallace Floyd Design Group, has been selected to design the 2.8-acre North End Parks to be built over a portion of Boston's Big Dig.

William J. Mitchell will step down as dean of the School of Architecture and Planning at the Massachusetts Institute of Technology (MIT) at the end of the current academic year. He will remain at MIT to lead the school's Media Laboratory and its program in media arts and sciences.

Five design teams have been short-listed by the government of Hong Kong to design and build a $628 million, 2-million-square-foot government complex on the waterfront of the city's Victoria Harbor. Finalists are Kenzo Tange/Skidmore Owings & Merrill, Kohn Pedersen Fox/Wong & Ouyang, NBBJ/Aedas, Norman Foster/RMJM, and Rocco Design. The project will include government offices, a legislative complex, and an exhibition gallery. A winner is expected to be announced later this year.

Frank O. Gehry, FAIA, winner of the Pritzker Prize in 1989 and a juror for the prize from 1993 to 1995, will rejoin the jury. J. Carter Brown, who was chair of the jury since the founding of the prize in 1979, died in June 2002.

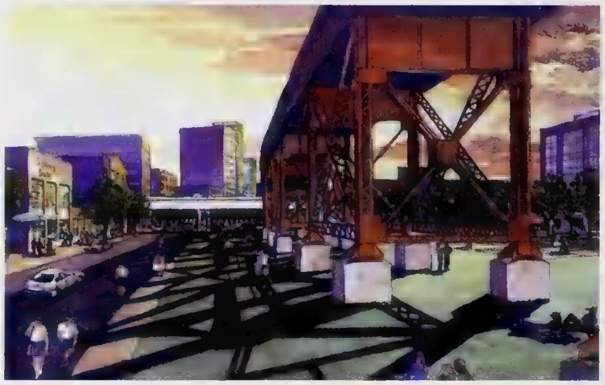
Australian power company EnviroMission plans to build a 3,300-foot solar tower by 2006. The world's tallest freestanding structure is currently Toronto's 1,813-foot CN Tower.

The New Museum of Contemporary Art has named a shortlist of five firms to create designs for a new facility on Bowery at Prince Street, in New York City. The five firms are Adjaye Associates, Gigon/Guyer, Kazuyo Sejima + Ryue Nishizawa/SANAA, and Reiser + Umemoto RUR Architecture.

AIA Honor Award winners announced

The American Institute of Architects (AIA) has announced the recipients of the 2003 AIA Honor Awards. Selected from nearly 600 total submissions, 31 recipients will be honored in architecture, interiors, and urban design at the 2003 AIA National Convention and Expo, May 8–10, in San Diego.

Winning projects include the Howard House (top), West Pennant, Nova Scotia, by Brian MacKay-Lyons; Kate and Laurance Eustis Chapel (left), New Orleans, by Eskew + Dumez + Ripple; and Schuylkill Gateway (below), Philadelphia, by Sasaki Associates.



PHOTOGRAPHY: © JAMES STEEVES (TOP); TIMOTHY HURSLEY (MIDDLE); SASAKI ASSOCIATES

Honor Awards in Architecture

Concert Hall and Exhibition Complex, Rouen, France, by Bernard Tschumi Architects;
American Folk Art Museum, New York City, by Tod Williams Billie Tsien Architects;
Howard House, West Pennant, Nova Scotia, by Brian MacKay-Lyons Architecture Urban Design;
Heritage Health & Housing, New York City, by Caples Jefferson Architects;
Will Rogers World Airport Snow Barn, Oklahoma City, by Elliott + Associates Architects;
Federal Building and United States Courthouse, Central Islip, New York, by Richard Meier & Partners;
Boston Public Library, Boston, by Machado and Silvetti Associates;
Diamond Ranch High School, Pomona, California, by Morphosis;
3rd & Benton/7th & Grandview Primary Centers, Los Angeles, by Rios Associates;
Simmons Hall, MIT, Cambridge, Massachusetts, by Steven Holl Architects;
New Academic Complex, Baruch College CUNY, New York City, by Kohn Pedersen Fox Associates;
BoO1 "Tango" Housing, Malmo, Sweden, by Moore Ruble Yudell Architects & Planners;
Colorado Court, Santa Monica, California, by Pugh Scarpa Kodama;
Lever House Curtain Wall Replacement, New York City, by Skidmore, Owings & Merrill;
Hypo Alpe-Adria-Center, Klagenfurt, Austria, by Morphosis.

Honor Awards in Interiors

Kate and Laurance Eustis Chapel, New Orleans, by Eskew + Dumez + Ripple;
Central Synagogue, New York City, by Hardy Holzman Pfeiffer Associates;
Craft, New York City, by Bentel & Bentel, Architects/Planners;
Lutece, Las Vegas, by Morphosis;
Collins Gallery, Los Angeles, by Patrick J. Tighe, AIA;
Gardner-James Residence, New York City, by Valerio Dewalt Train Associates;
Martin Shocket Residence, Chevy Chase, Maryland, by McInturff Architects;
Global Crossing Corporate Headquarters, New York City, by Lee H. Skolnick Architecture;
ImageNet, Oklahoma City, by Elliott + Associates Architects;
South Court, The New York Public Library, New York City, by Davis Brody Bond;
The Architecture of R.M. Schindler Exhibition at MOCA, Los Angeles, by Chu + Gooding Architects.

Honor Awards in Urban Design

Schuylkill Gateway, Philadelphia, by Sasaki Associates;
Interstate MAX Station Area Revitalization Strategy, Portland, Oregon, by Crandall Arambula;
Howard University: LeDroit Park Revitalization Initiative, Washington, D.C., by Sorg and Associates;
Charlottesville Commercial Corridor Plan, Charlottesville, Virginia, Torti Gallas and Partners-CHK;
East Baltimore Comprehensive Physical Redevelopment Plan, Baltimore, Urban Design Associates. *J.E.C.*

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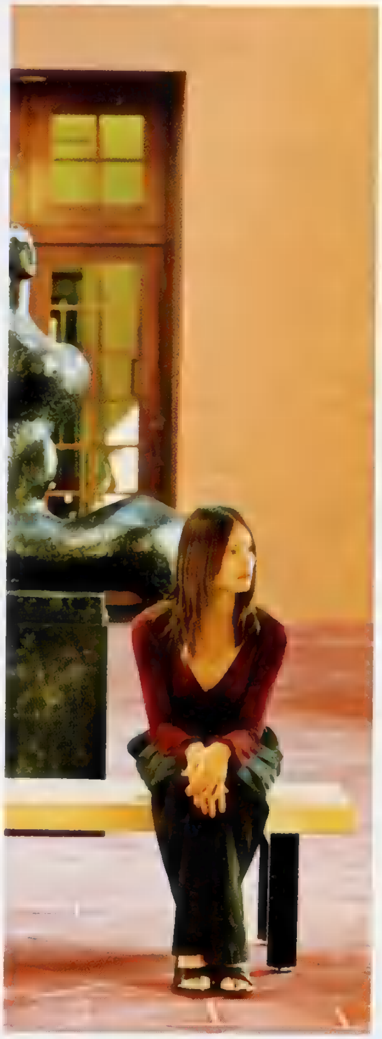

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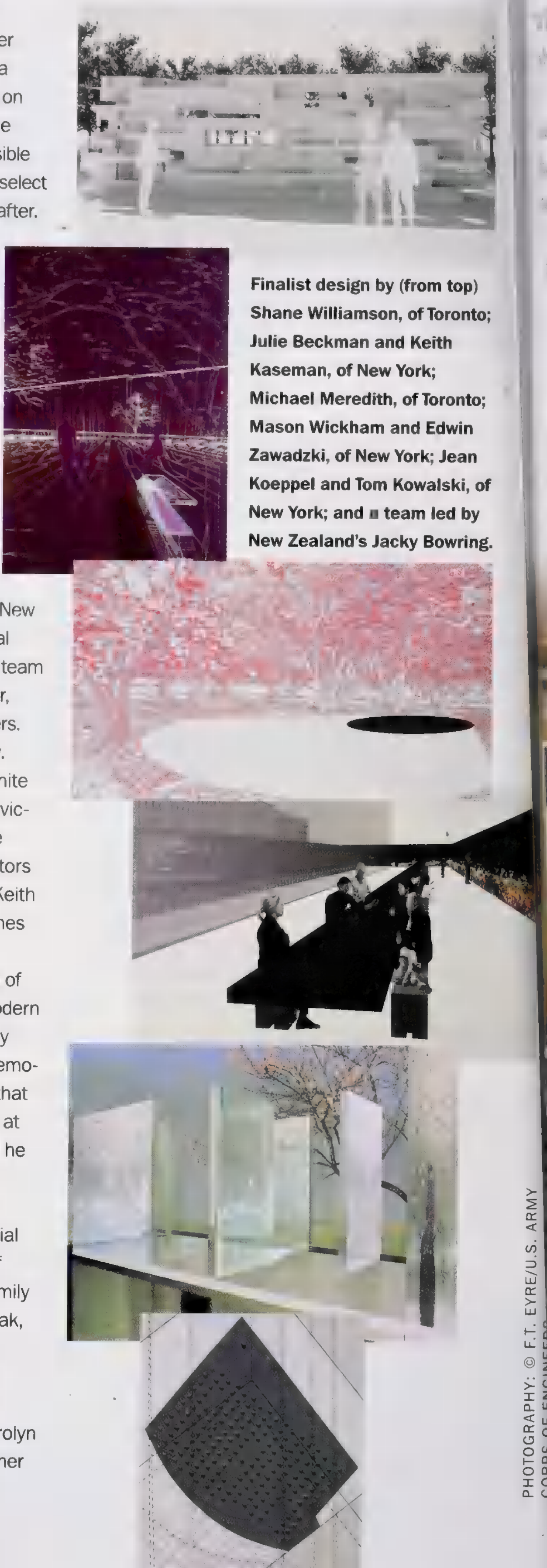
Pentagon Memorial competition winner to be named soon



Finalist design by (from top) Shane Williamson, of Toronto; Julie Beckman and Keith Kaseman, of New York; Michael Meredith, of Toronto; Mason Wickham and Edwin Zawadzki, of New York; Jean Koeppel and Tom Kowalski, of New York; and a team led by New Zealand's Jacky Bowring.

PHOTOGRAPHY: © F.T. EYRE/U.S. ARMY

The Army Corps of Engineers, with a team of selected jurors, is expected to choose a winner later this month in the competition to design a memorial to the September 11, 2001, attack on the Pentagon. The Department of Defense, the competition sponsor that is ultimately responsible for building the winning design, is expected to select a contractor to build the memorial soon thereafter.

The competition to memorialize the 184 victims of the Pentagon terrorist attack elicited 1,126 entries. Six finalists were chosen in October. Reed Kroloff, a competition consultant, said, "The competition produced exactly what one hoped it would—an opportunity for people who might not otherwise be taken seriously by a big client to do a project."

Two of the six finalists are from the University of Toronto faculty, Shane Williamson and Michael Meredith. Williamson designed a masonry wall within a grove of trees, and Meredith, of Clifton Park, New York, proposed a marble pedestal with a central viewing stand. The design by the New Zealand team of Jacky Bowring, Peter England, Richard Weller, and Vladimir Sitta evokes aircraft flight recorders.

Three teams are based in New York City. Mason Wickham's and Edwin Zawadzki's granite table includes seats with the names of each victim. Jean Koeppel and Tom Kowalski propose installing glass slabs cloaked in mist that visitors can write messages on. Julie Beckman and Keith Kaseman envision 184 cast-aluminum benches running across the 1.93-acre site.

Jury member Terence Riley, chief curator of architecture and design at the Museum of Modern Art, does not believe the competition is "a very reliable predictor" for a World Trade Center memorial. "The family members in Washington feel that the collapse of the twin towers will always be, at least symbolically, the primary image of 9/11," he says. "Their attitude has been to keep the Pentagon memorial very modest and private."

Other members of the Pentagon Memorial competition jury include former secretaries of defense Harold Brown and Melvin R. Laird, family members Wendy Chamberlain and Jim Laychak, artists Sheila Levrant de Bretteville and Mary Miss, landscape architects Walter Hood and Roger Martin, University of Virginia School of Architecture dean Karen Van Lengen, and Carolyn Shelton, wife of General H. Hugh Shelton, former Joint Chiefs of Staff chairman. *David Sokol*

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Solar panels installed on White House buildings

The National Park Service (NPS) installed the first solar electric system at the White House compound this past fall. The system, installed in August, went online in September and was officially unveiled in January. NPS also installed two solar-hot-water systems—the first since former president Carter's and the first one ever fully integrated into a White House building design.

"This is not going to wean us off foreign energy by itself, but it has great symbolism," said Mike Paranzino, spokesman for the Solar Energy Industries Association. The 8.75 kW photovoltaic (PV) system feeds into the White House complex's electrical distribution network, supplying a fraction of power at the 55,000-square-foot White House, the 600,000-square-foot Old Executive Office Building, and other structures in the 18-acre compound.

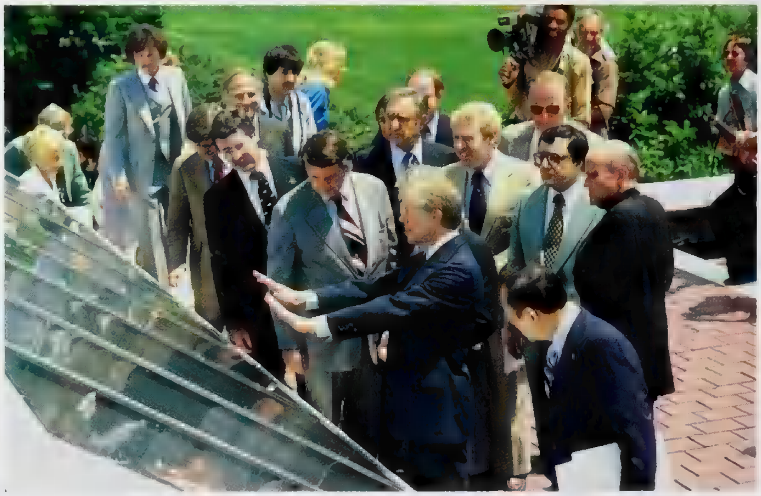
"The solar-electric system provides enough energy for three to four average-size houses," said Steven J. Strong, president of Solar Design Associates in Harvard, Massachusetts. He designed the systems with NPS.

The 167-panel PV system, manufactured by Evergreen Solar of Marlboro, Massachusetts, sits atop the NPS's 3,300-square-foot maintenance building. A three-panel solar-thermal system by California-based SunEarth is also on the roof to provide hot water for the grounds crew members that shower and change there.

At the president's newly rebuilt 800-square-foot cabana near the West Wing, another SunEarth thermal system with about 160 square feet of solar panels heats the water for the first family's shower, hot tub, and pool. It was "integrated into the historically correct, lead-coated-copper, standing-seam roof," Strong said.

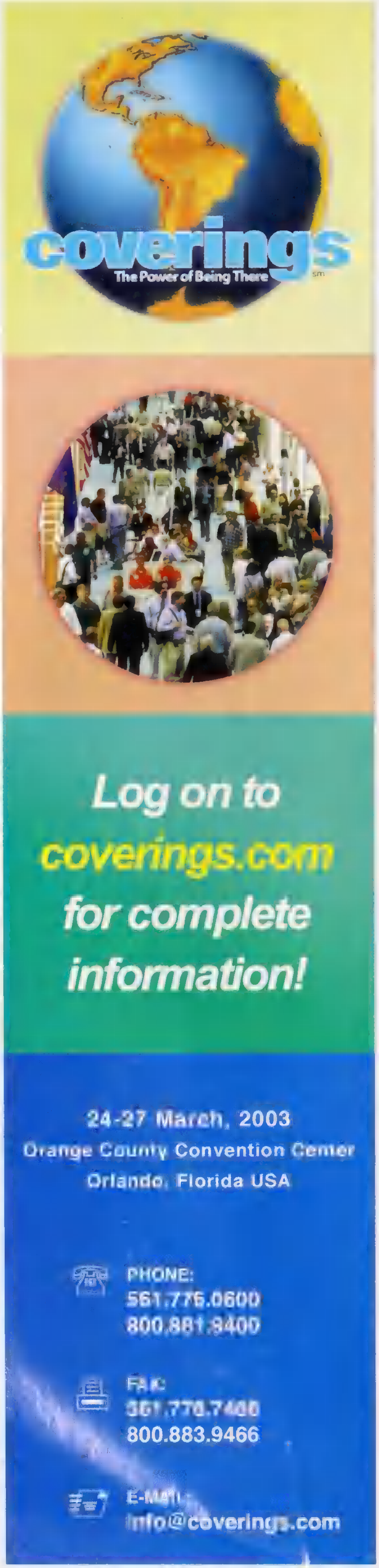
"Part of our mission is to promote renewable resources and alternative energy," said project manager James M. Doherty, NPS's White House architect. The thermal systems cost approximately $25,000 and the solar-electric systems cost about $75,000.

This is the first time that solar panels have been fully integrated into the design of a White House building, though then president Carter installed the first solar hot-water panels in 1979. Carter's system sat atop the West Wing itself. Its 32 panels delivered 82 percent of the West Wing's hot-water needs, said Hector M. Guevara, founder of Hytech Industries, the Bohemia, New York, company that installed and supplied the system. The panels were removed in the early 1980s by President Reagan. *Barbara Saffir*



Steven J. Strong, president of Solar Design Associates, stands by the solar-thermal collector array (above) atop the cabana building at the White House. In June 1979, President Carter (left) was at the unveiling of the solar-hot-water panels that Reagan removed in the early 1980s.

PHOTOGRAPHY: © SOLAR DESIGN ASSOCIATES (TOP); JIMMY CARTER



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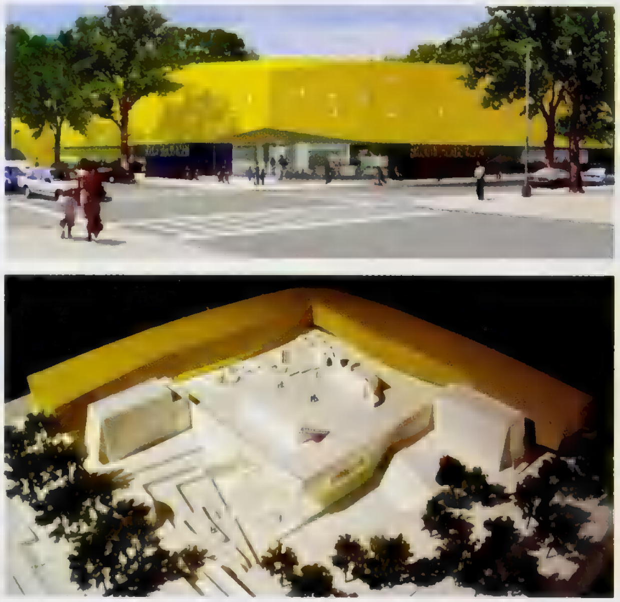


The L-shaped museum addition will include a tiered courtyard (bottom).

Viñoly designs "green" expansion to the Brooklyn Children's Museum

Unveiled in December 2002, the expansion of the Brooklyn Children's Museum by Rafael Viñoly Architects is being touted as the first "green" children's museum design in the United States.

Being constructed above a mostly subterranean, 25-year-old Hardy Holzman Pfeiffer structure, the Viñoly project will include 3,000 square feet of renovated existing space and a 51,000-square-foot expansion to the existing 51,000-square-foot museum. Construction on the $39 million project will begin this year, with completion in 2006.

The cheerful, yellow, L-shaped structure, which will define the corner of Brooklyn and St. Marks avenues in Crown Heights, will open onto a tiered courtyard and play space. A glass curtain wall along the ground floor will allow passersby to look in and visitors to look out onto the street. Permanent exhibitions will be in an interior foyer. Hovering above the curtain wall, the structure's gently undulating facade of daffodil-colored ceramic tile is perforated with constellations of porthole windows. From inside, these windows, some at the eye level of toddlers and others at the eye level of teens, will provide views outside for people of all sizes.

The new yellow building will also be green. The addition will incorporate geothermal heat pumps, recycled and renewable materials, and rooftop solar panels. Because the museum has ongoing environmental education programs, the green features themselves will be incorporated into ongoing exhibitions about energy and sustainable design. *Tess Taylor*

Report finds significant safety hazards at U.S. Capitol

Despite efforts to improve and coordinate emergency evacuation plans in the months following the 9/11 terrorist attacks, the Office of Compliance of the United States Congress has found that the U.S. Capitol complex still demonstrates significant deficiencies in emergency preparedness.

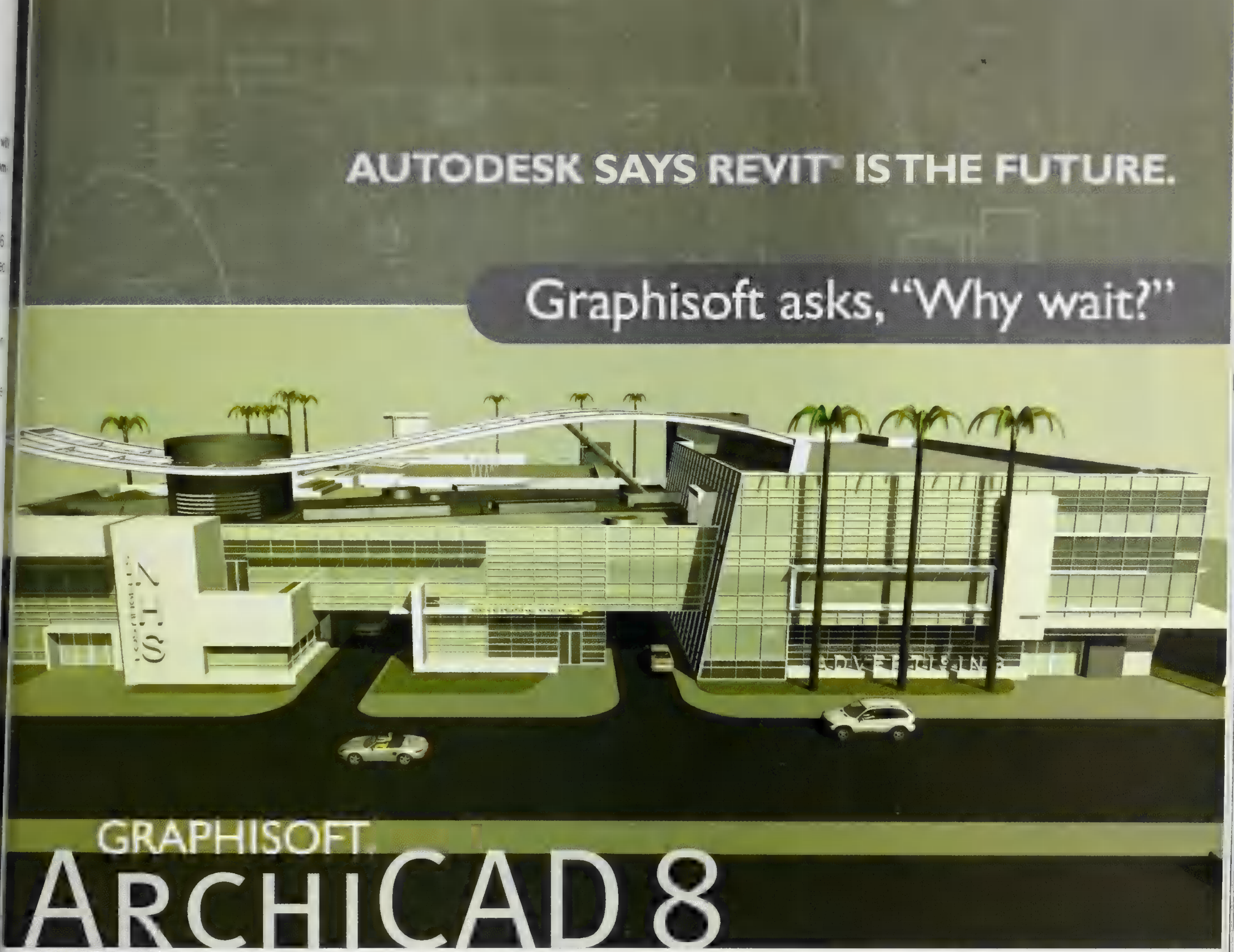
The Office of Compliance issued this evaluation in its "Report on Occupational Safety and Health Inspections," a biennial publication. Legislative branch buildings comprise approximately 20 million square feet and house 30,000 employees.

The Library of Congress revealed the greatest lack of emergency planning capability, according to the report. Many Library of Congress offices have outdated evacuation schemes, while inspections also showed that the three-building complex suffers from inadequate smoke detection, emergency lighting and alarming, and sprinkling.

Among the other problems noted were crowding and inaudible fire alarms in the Capitol building, as well as exit routes and fire extinguishers that were blocked in nonoffice spaces such as the Capitol Power Plant. Green says that many of these glitches will be quickly remedied: "The general counsel of the Office of Compliance has never had to go to litigation to accomplish abatement of any of these hazards."

In a statement, Architect of the Capitol Alan M. Hantman, FAIA, said that a proposed reorganization of the 2,000-person agency, which would place the Safety, Fire, and Environmental Programs Office within the Office of the Facilities Manager, "will improve the overall communication, emphasis, and execution of our safety program, not detract from it." ***D.S.***

IMAGES: COURTESY RAFAEL VIÑOLY ARCHITECTS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Maki designs two new Washington University buildings

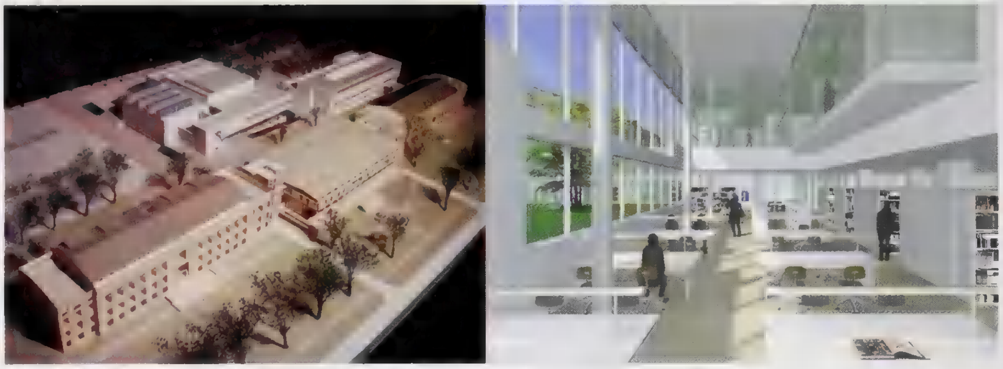
Washington University in St. Louis has unveiled designs by Japanese architect Fumihiko Maki for two new buildings, totaling $39 million in construction, in the Sam Fox Arts Center on the university's main campus.

Maki served as an associate professor in Washington University's architecture department from 1956 to 1963. He also designed one of the three existing buildings in the Fox arts center, Steinberg Hall, a Modernist pavilion with a cantilevered upper level, in 1960. Steinberg was Maki's first completed building.

The centerpiece of the five-building complex will be a new, 65,000-square-foot art museum to house the university's collection, which is currently displayed in Steinberg Hall. The Museum of Art, which is now called the Gallery of Art, was founded in 1881 as the first art museum west of the Mississippi River. Its holdings are strongest in 19th- and 20th-century European and American art. The new museum building will be constructed of limestone and glass and will also include classroom space and a new library.

Adjacent to the new museum, a 38,000-square-foot building for the School of Art will also be designed by Maki. The new complex will allow the university to consolidate visual arts programs that are currently scattered around campus.

Bixby Hall and Givens Hall, which flank Steinberg Hall and presently house the School of Art and the School of Architecture, were built in a Beaux-Arts style. Construction will begin on the new buildings in March 2004, and Steinberg Hall will undergo renovations. *Kevin Lerner*



In the model (left), the new buildings are in the lighter shade in the back. The new museum is in the back center, and the art school (interior rendering, right) is in the back to the right.

IMAGES: COURTESY WASHINGTON UNIVERSITY

AIA names Young, Jefferson, and Kemper Award winners

The American Institute of Architects (AIA) has announced winners of the 2003 Edward C. Kemper Award, Whitney M. Young, Jr. Award, and Thomas Jefferson Award for Public Architecture, to be presented at the AIA national convention in San Diego in May. C. James Lawler, Jr., FAIA, will receive the 2003 Edward C. Kemper Award. The Hispanic American Construction Industry Association (HACIA) will be given the Whitney M. Young, Jr. Award, and Edmund W. Ong, AIA, and Susan Williams have been selected for the Thomas Jefferson Award for Public Architecture.

The Edward C. Kemper Award recognizes outstanding service to the AIA. Lawler, the founder and principal of C.J. Lawler Associates, in West Hartford, Connecticut, was AIA national president in 1991. He completed a term as chancellor of the AIA College of Fellows in 2002.

The Whitney M. Young, Jr. Award honors the late civil rights and urban leader who urged architects to take greater social responsibility. HACIA is being recognized for its work in promoting Hispanic Americans for public and private construction projects in Chicago. The 23-year-old business association also encourages careers in architecture and construction with a scholarship foundation for minority students in architecture, engineering, and construction management.

Ong will receive the Thomas Jefferson Award in recognition of his 26-year tenure as chief architect of the San Francisco Redevelopment Agency. Williams will receive the award for her role in advocating quality design and preservation as an Indianapolis City-County Council representative and her current role as executive director of the Indiana State Office Building Commission. *D.S.*

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News Briefs

Peter Eisenman's design for the City of Culture (left) and Guest Worker Housing by Bryan Bell (right) will be on view at the National Design Triennial.

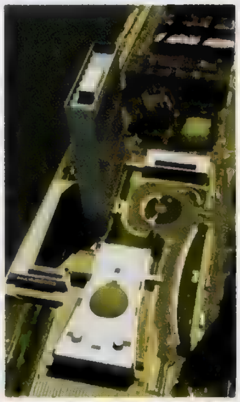
ARCHITECTS (LEFT); BRYAN BELL OF DESIGN CORPS

Architects represented at National Design Triennial The Cooper-Hewitt, National Design Museum's second National Design Triennial will profile architects in abundance. Architects chosen include Asymptote and Peter Eisenman, both of New York City; Bryan Bell, of Raleigh, North Carolina; San Francisco's Stanley Saitowitz; Kiki Wallace and Mark Sofield, of Longmont, Colorado; and Jennifer Siegal and Escher + GuneWardena Architecture, both of Los Angeles. *Inside Design Now* runs from April 22 through August 3, 2003.

New York makes statewide commitment to being green In his annual address to the state legislature, Governor George E. Pataki of New York pledged that within 10 years the state would produce one-quarter of its energy by renewable resources. The governor's January 8 statement far surpasses other states' green energy goals; neighboring New Jersey plans that 6.5 percent of its power will be from green sources by 2012.

Governor Pataki's promise would require construction of as much as 4,000 megawatts of alternative power. Solar and wind energy production would directly benefit, because hydroelectric plants are already the state's largest source of renewable power.

United Nations renovation to be complete by 2009 The United Nations has announced that it will renovate its New York headquarters. Officials there say that the 38-story U.N. Secretariat Building has no sprinkler system and requires asbestos remediation and new electrical and operating systems. The addition of a new 30-story office building is also planned; the total price tag for the project is expected to top $1 billion.



The United Nations will renovate its facilities.

Department of Homeland Security to be headquartered in northern Virginia After a secret monthlong search for office space, the Bush administration has decided to locate the Department of Homeland Security headquarters in the suburbs of northern Virginia. Congress set a January 24 deadline for the president to create and house the department, which will ultimately include 177,000 employees.

At press time, the Bush administration had narrowed its selection to three properties. Two buildings are in Tysons Corner, Virginia, and the third is located within an office campus in Chantilly, Virginia. The lease comprises 275,000 square feet with an option to double that space. The maximum annual cost of occupancy is $25.9 million.

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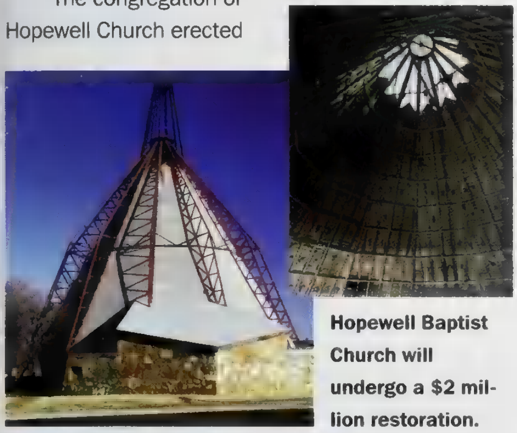
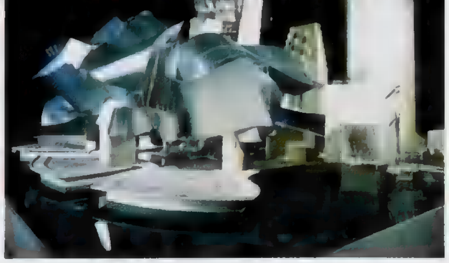
Bruce Goff landmark to be restored The Hopewell Foundation is raising funds to restore and update Hopewell Baptist Church, one of Bruce Goff's best-recognized designs. The conical-shaped structure with a 12-sided base was vacated in 1989 but escaped demolition. It was recently listed on the National Register of Historic Places. The Hopewell Foundation will renovate the church according to a design by Rand Elliott, FAIA, of Oklahoma City–based Elliott + Associates Architects.

The congregation of Hopewell Church erected the structure, completed in 1951, in far northwest Oklahoma City for approximately $20,000. The building's exterior trusses—composed of oil-field pipe—as well as its stone exterior demonstrate Goff's trademark use of surplus and indigenous materials to achieve affordable design. Elliott + Associates estimates that the restoration will cost $2 million.


Hopewell Baptist Church will undergo a $2 million restoration.

Guggenheim scraps East River museum plans The Solomon R. Guggenheim Foundation announced on December 30, 2002, that it is withdrawing its plans for a new Guggenheim Museum on the East River, in Manhattan. The foundation acknowledged that it cannot afford to finance the proposed $950 million project designed by Frank Gehry, FAIA. Existing budget difficulties forced the Guggenheim Las Vegas to close indefinitely beginning January 5, 2003.


Gehry's East River Guggenheim was cancelled.

In November 2000, under then-mayor Rudolph Giuliani, New York City pledged $67.8 million to the East River Guggenheim project. Gehry's model and drawings for the proposed 572,000-square-foot building were exhibited at the Guggenheim Museum in New York in 2000 and 2001 [RECORD, May 2000, page 41].

With this announcement, it is unclear if the Guggenheim Foundation will consider developing a new museum at Ground Zero, as has been speculated. Peter B. Lewis, chair of the foundation, promises that a new museum will be realized "on another scale and perhaps at another place." *J.E.C.*

Nelson wins ASLA's Olmsted Medal On January 10, the American Society of Landscape Architects (ASLA) awarded its annual Olmsted Medal to Gaylord A. Nelson, who served as U.S. Senator from Wisconsin from 1963 to 1981. The medal, established in 1990, is the ASLA's highest honor presented to an individual outside the landscape-architecture profession.

Nelson is being recognized for his lifelong contributions to the environmental movement. In addition to founding Earth Day in 1970, Nelson established the Outdoor Resources Action Program and championed significant environmental legislation, such as the Clean Air Act and the Water Quality Act. *News Briefs by David Sokol unless otherwise noted.*

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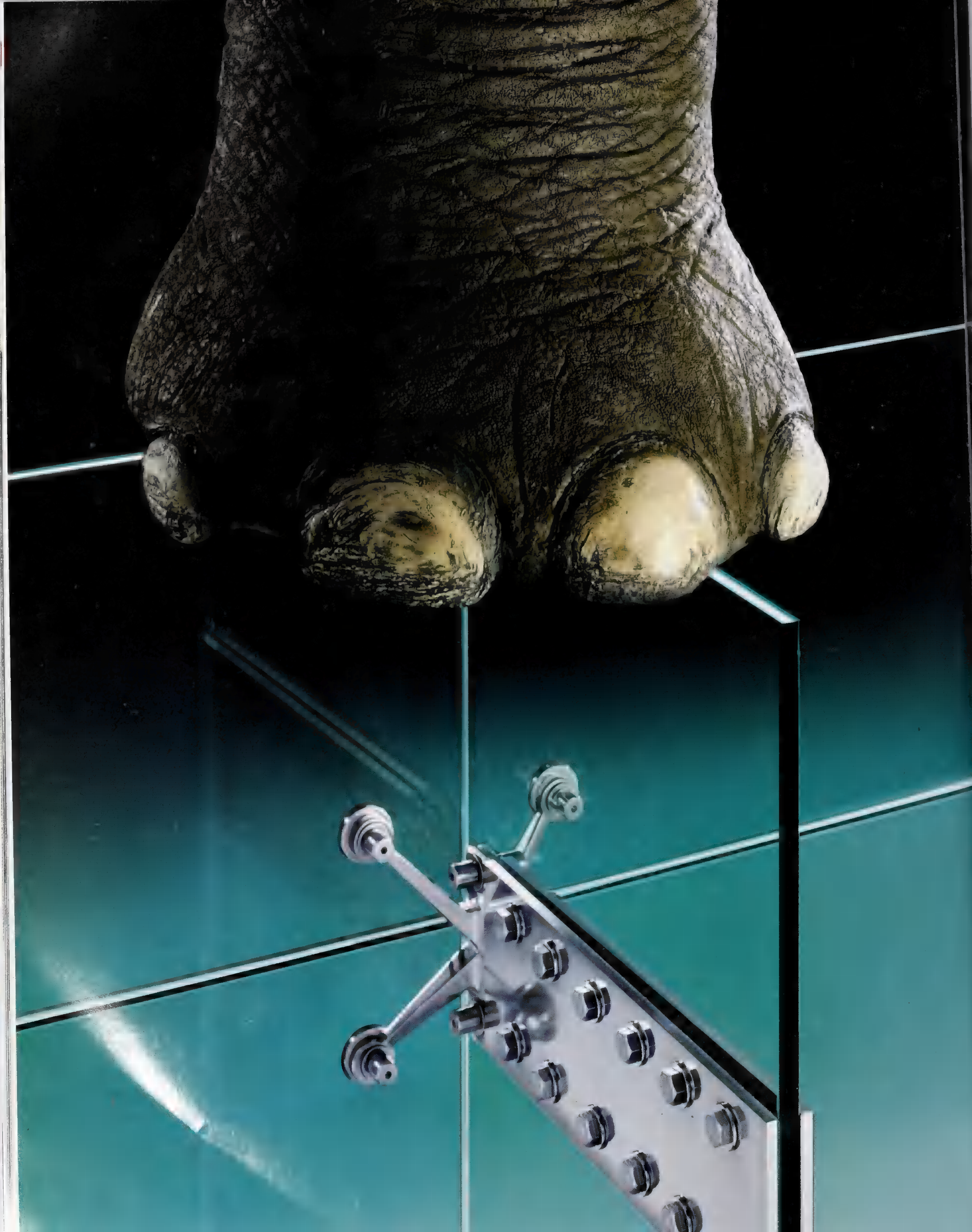

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Dates & Events

New & Upcoming Exhibitions

Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, the exhibition demonstrates the transformative powers of sustainable design. At the National Building Museum. For more information call 202/272-2448 or visit www.nbm.org.

Intricacy
Philadelphia
January 18–April 6, 2003
Guest curated by the architect and theorist Greg Lynn, this exhibition includes works by architects, designers, and artists that reflect an emerging sensibility that Lynn has labeled "intricacy." This notion refers, in the abstract, to a new visual and spatial language of folding, interweaving, and layering—parts relating to wholes—that has been heralded by the digital and genetic engineering revolutions. The exhibition synthesizes a vast geography of ideas and practices drawn from many disciplines and cultural fields. At the Institute of Contemporary Art at the University of Pennsylvania. Call 215/898-5911 or visit www.icaphila.org.

Shigeru Ban
Cambridge, Massachusetts
January 27–March 16, 2003
This exhibition will explore contemporary Japanese architect Shigeru Ban's innovative design approach and will trace the architect's investigation of materials, structural systems, and methods of construction in the development of alternative architectural designs. At the Harvard Design School. For more information, visit www.artmuseums.harvard.edu.

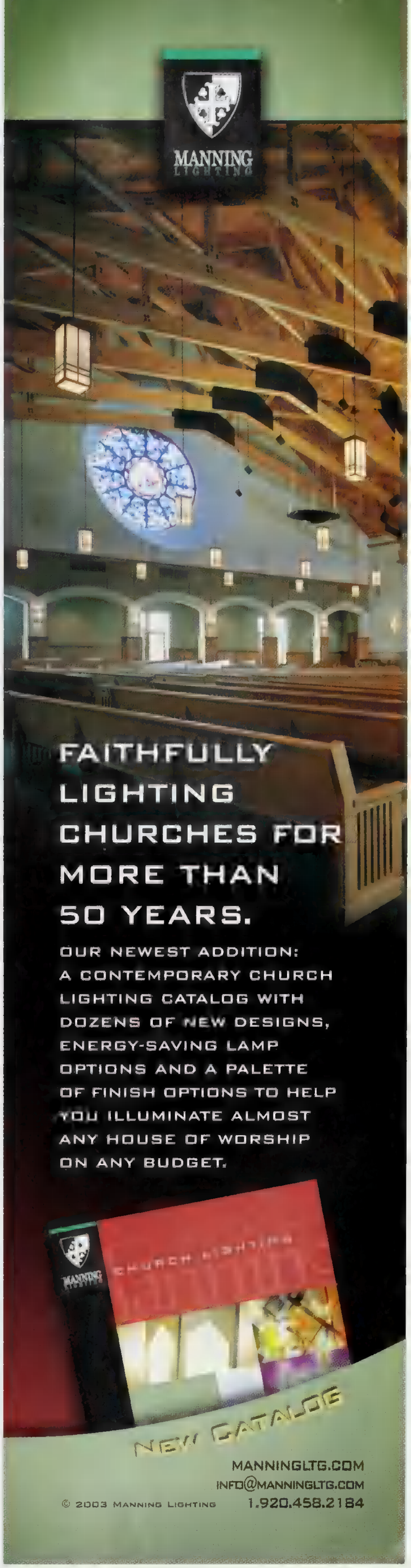
Trespassing:
Houses x Artists
Los Angeles
January 29–April 13, 2003;
May 7–July 27, 2003
The two-part exhibition, co-organized by the MAK Center for Art and Architecture and Bellevue Art Museum, highlights nine new architectural projects developed in a joint effort between contemporary artists and architects Alan Koch and Linda Taalman of OpenOffice. The projects engage the house as subject, investigating its forms, functions, and significance while imagining a wide variety of prototypes for living. In addition to architectural drawings and renderings, *Trespassing* presents oversize scale models, film and interactive elements, as well as an accompanying catalog outlining the projects' development. At the MAK Center for Art and Architecture. For more information call 323/651-1510 or visit www.makcenter.org.

Next: LWPAC
Vancouver, B.C.
January 30–May 2003
The second exhibition presented in *Next*, a series on emerging artists from the Pacific Rim. Vancouver architect Oliver Lang, a partner in LWPAC (Lang Wilson Practice in Architecture Culture) will redesign the *Next* space, a laboratory for new art and ideas in a wide variety of media. A new gallery will be designed by LWPAC to complement and accommodate this program, not only to generate a new space but also to document the process of its production. At Vancouver Art Gallery. Call 604/662-4715 or visit www.vanartgallery.bc.ca.

Ongoing Exhibitions

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural insinuations regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org for more information.

Body Design
San Francisco
November 16, 2002–March 23, 2003
Conventional notions of good design, especially theories about ergonomics, favor objects and spaces that accommodate and even mimic the human form. This exhibition looks at several



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provocative designers who take this thinking one step further, reconsidering the relationships of body to space and physiology to function. Roughly 20 prototypes and commercially available works from the fields of fashion, furniture, industrial design, and interior design are featured. At San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org

David Adler, Architect: The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. Also included will be major documents from the Chicago Art Institute's permanent collection and photos newly realized by the renowned Chicago architectural photography firm of Hedrich-Blessing. At the Art Institute of Chicago. Call 312/443-3600 or visit www.artic.edu.

Conferences, Symposia, Lectures

Swiss Made
Houston
January 22–February 12, 2003
The Spring 2003 RDA Lecture Series features five Swiss architects who share an uncommon precision of craftsmanship and deftness of material handling that has come to emblematize the postwar Swiss architectural legacy. The careers of the five designers span from the 1950s to the present. The speakers in this lecture series include Annette Gigon, Mike Guyer, Kurt W. Forster, Marianne Burkhalter, Livio Vacchini and Silvia Gmur. At Brown Auditorium, The Museum of Fine Arts, Houston. Call 713/348-4876 or visit www.rice.edu.

Dallas Architecture Forum Lecture Series
Dallas
November 21, 2002–February 13, 2003
The Dallas Architecture Forum features its seventh season of lectures by some of the most important designers in the world. Included in the series will be talks by Enrique Norten, Rick Joy, and Terence Riley. For information, call 214/740-0644 or visit www.dallasarchitectureforum.org.

Spotlight on Design
Washington, D.C.
February 13, 2003
A lecture by Topher Delaney. The San Francisco–based landscape architect will discuss her work and belief in the healing power of design. Delaney's 26-year career as an environmental architect and builder has encompassed a wide variety of projects including rooftop gardens and award-winning sanctuary gardens for medical facilities. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Designer's Saturday
Hong Kong
February 22, 2003
The objective of this program is to provide the public with a behind-the-scenes look at applied art/design companies in an informative and relaxed setting, giving an opportunity for contact between current and future designers and the local community. By Atelier Pacific. Call 852/2869-8265 or visit www.atpac.com.

GlobalShop 2003
Chicago
March 16–18, 2003
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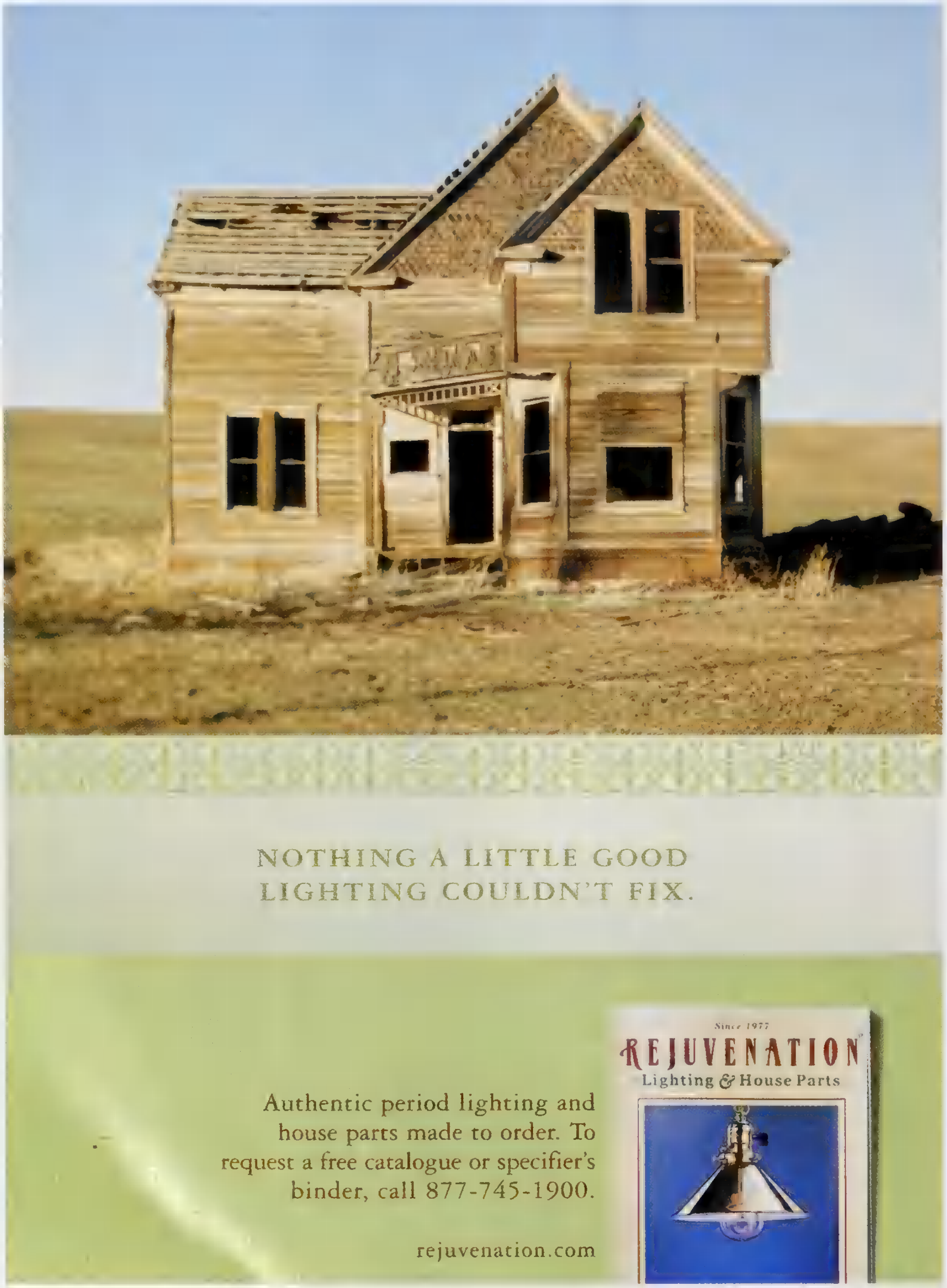

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Lightfair International
New York City
May 5–8, 2003
This year's Lightfair promises to be the biggest and most comprehensive annual architectural and commercial lighting conference to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering, design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit www.lightfair.com.

Competitions and Awards

The 2003 DuPont Benedictus Awards
Call for entries deadline: February 14, 2003
The competition, a collaborative effort between DuPont and the American Institute of Architects, with the cooperation of the International Union of Architects, recognizes the innovative and significant use of laminated glass. Architects may submit projects in seven categories: commercial, community, education, government, health care, recreation, and residential. For more details, call 202/367-1633 or visit www.aia.org or www.dupontbenedictus.org.

2003 Business Week/Architectural Record Awards
Call for entries deadline: March 14, 2003
The annual global awards program, sponsored by the American Institute of Architects, invites entrants to submit work that has demonstrated that "good design is good business." This is an opportunity for architects and clients to be recognized for exemplary collaboration between client/architect building teams who use architectural design solutions to achieve strategic goals. Entrants must submit a mission statement and business rationale describing how the project fits into an organization's overall goals. Additionally, entrants describe both the process and results, including measures of how the project's architectural design solution helped achieve those results. Public- and private-sector projects completed anywhere in the world since January 1, 2000, are eligible. Entries are welcome regardless of project or budget size, including new construction, interiors, and renovations/restorations. To download a submission packet, go to the AIA Web site at aia.org, or the ARCHITECTURAL RECORD Web site at archrecord.com. To order by telephone, call 888/242-4240 or 202/626-7467

International Achievement Awards
Deadline for entries: July 1, 2003
Sponsored by the Industrial Fabrics Association International (IFAI), this competition offers architects an opportunity to gain recognition for projects that have creatively used fabric. The competition features 26 competition categories. Project entries include photos of outstanding specialty fabric projects and descriptions of their unique and important characteristics. To request a brochure and entry form, contact Christine Malmgren at 800/225-4324 or 651/222-2508, e-mail cmmalmgren@ifai.com, or visit www.ifai.com.

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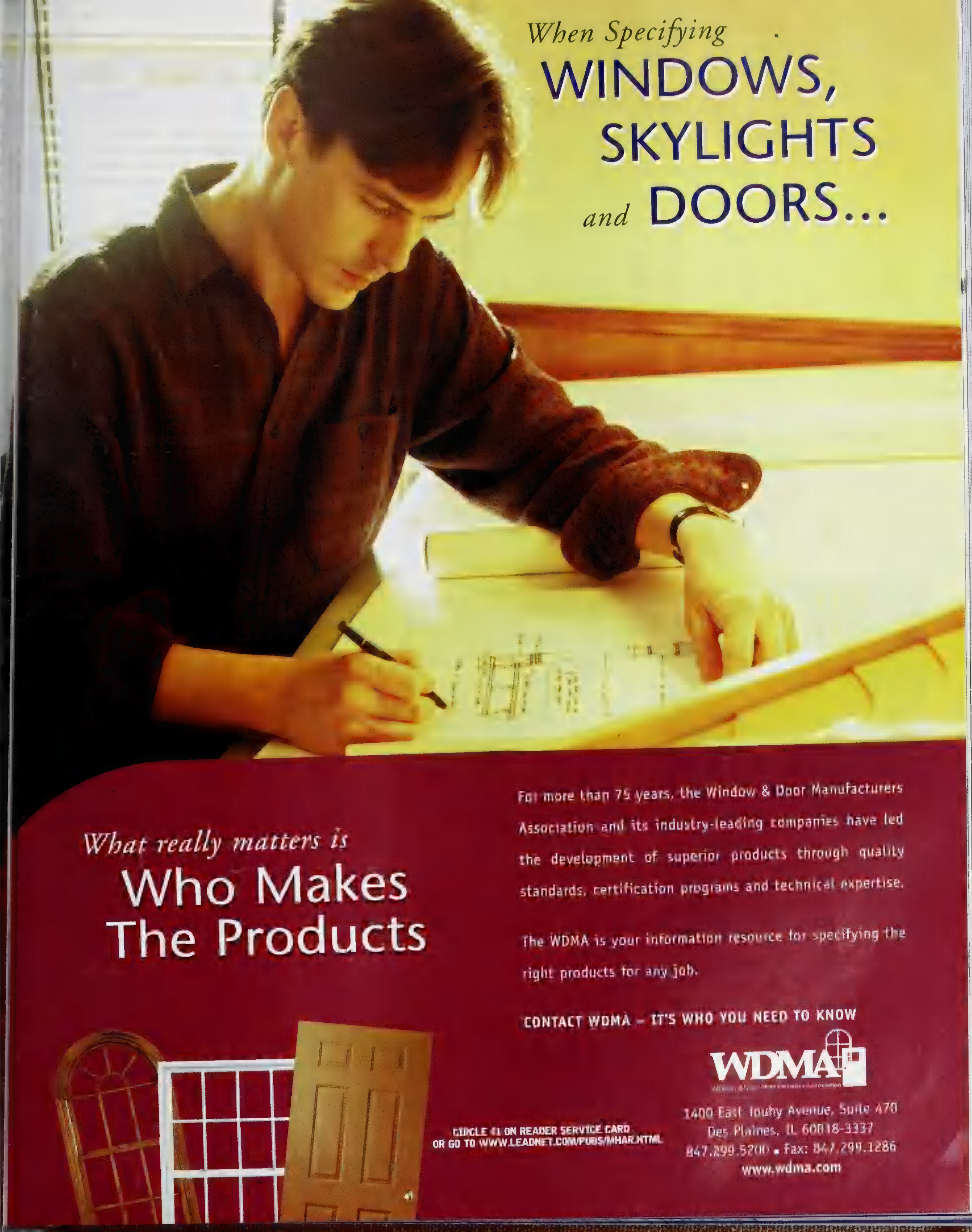

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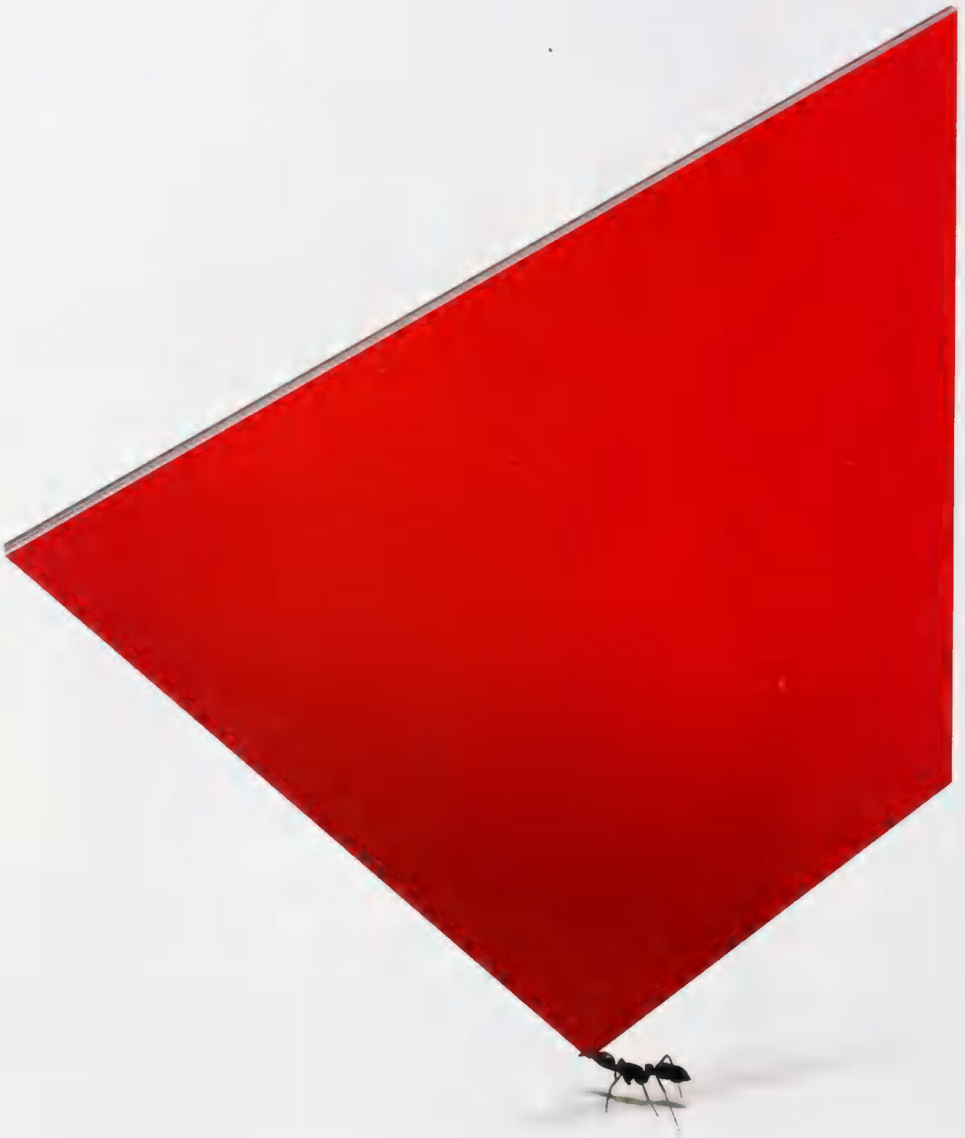

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Instead of devising a 21st-century urbanism, the latest WTC proposals rehash old notions of the future

Critique

By Robert Campbell, FAIA

I write this column shortly after the unveiling of nine proposals by seven teams for the site of the World Trade Center in Manhattan. They were a huge disappointment. Once again, we are being asked to take our children to an image zoo.

Most of the proposals look like a Stephen Spielberg invasion of dinosaurs, trampling the fabric of the city. It's some kind of backhanded tribute to these designs, I guess, that they've succeeded in making Lower Manhattan, which once seemed so soaring and powerful, look fragile and delicate. The existing city fabric becomes a sort of weedy undergrowth beneath these vast, self-important new constructions.

In most of the designs, there is at least one building intended to be the world's tallest. I guess we Americans have to take back the title from Kuala Lumpur, don't we? Often the proposed towers are connected by sky bridges, creating what more than one designer called "cities in the air." This is avant-garde architecture? People have been imagining and cartooning sky bridges and aerial cities in Manhattan since the 1920s. Flash Gordon got there first. In all the designs, there is more interest in creating a novel, dramatic skyline than in creating a human and usable city fabric at ground level.

The reason for the fireworks on the skyline is largely symbolic. All the designers were working with guidelines set out by the Lower Manhattan Development Corporation (LMDC). The guidelines state: "A tall symbol or structure that would be recognized around the world is crucial to restoring the spirit of the city." The statement is bombastic rant. The spirit of New York did not depend on the Twin Towers, which were dreadful in every way.

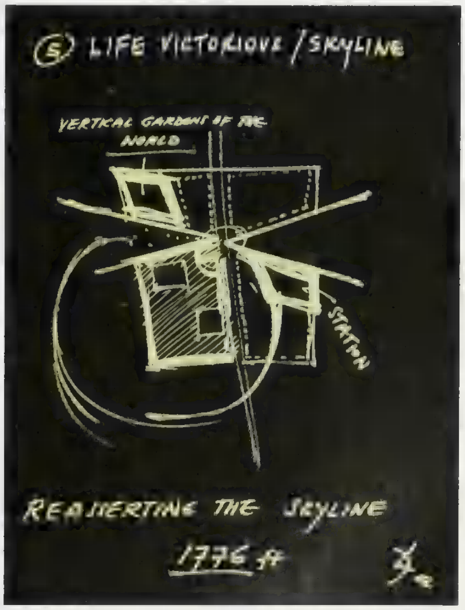
Is there any reason, anyway, for this kind of massive development in this particular location? The LMDC's program calls for 6 to 10 million square feet of commercial space plus a great deal of other stuff, all on a site that is just 60 percent larger than Washington Square. Is there any market for it, with 17 million square feet of office space currently vacant in Lower Manhattan? And if there is, should the new space be in this location? There is plenty of underutilized land only a few blocks away. Why pile such gargantuan development on one small parcel? How do you phase it?

Cloning an old formula

It's not as if anyone has thought freshly about what the program should be. The LMDC's program is déjà vu all over again. It's a recap of the program of 30 or 40 years ago, when the World Trade Center was first conceived. The only purpose of cloning this ancient program is to satisfy the developers who hold leases on the site and hope to collect their insurance money, and the Port Authority of New York and New Jersey, which hopes to collect rent again from the lessors. (It's a curious sidelight that nothing about the World Trade Center, present or past, has anything to do with the Port of New York, which is what the Port Authority is supposed to be worrying about.)

With one partial exception (the Viñoly/Schwartz/Ban team in one of its three proposals), none of these seven supposedly daring designers bothers to challenge the program. Nobody does any fresh thinking about much more than sculptural form or seductive parkland. I'd hoped—actually, I'd assumed—that some or all of the architects would deliberately violate the program. They'd propose some alternatives. That would bring pressure on the LMDC and its parent organization, the Port Authority. The Authority, which is largely controlled by New York's Governor Pataki, could then exercise some political muscle. It could break the leases and open the door to some fresh questions. Such as: What would be a good downtown neighborhood for our own time, now in the 21st century? What is genuinely new about the world that is evolving, and how should urban design respond to it? What are the virtues of traditional urbanism that we should be sure to hang on to? Instead, both in program and in design, the architects and the LMDC are rehashing the late 20th century.

Part of what seems to be driving the current zeal for a glorious and novel skyline is a concept that I thought had long since been put to rest by the philosopher Karl Popper and other thinkers. This is the belief that architecture must serve some emerging zeitgeist, that it must be midwife to a future that is struggling to be born. For those who embrace such a religion (which is what it is), it is helpful to remember that anything new will soon be old, and that it won't be either better or worse for being so. Architecture isn't about forward- or backward-looking ideas. It's about good ideas and bad ones. Piling a gargantuan commercial monoculture on this site may not be one of the good ones. Whether it is or not, the fact is that the question hasn't bee investigated. The LMDC has take over an old program that nev



A sketch by Libeskind shows the retention of the "bathtub" wall around the old WTC site, with new buildings set along an angled axis.

Contributing editor Robert Campbell is the Pulitzer Prize–winning architecture critic of The Boston Globe.

worked well, added some tchotchkes, and called it a day. Why hasn't it seized the opportunity to reconsider the future of the WTC site not as an isolated entity, but as a piece of the redevelopment of Lower Manhattan?

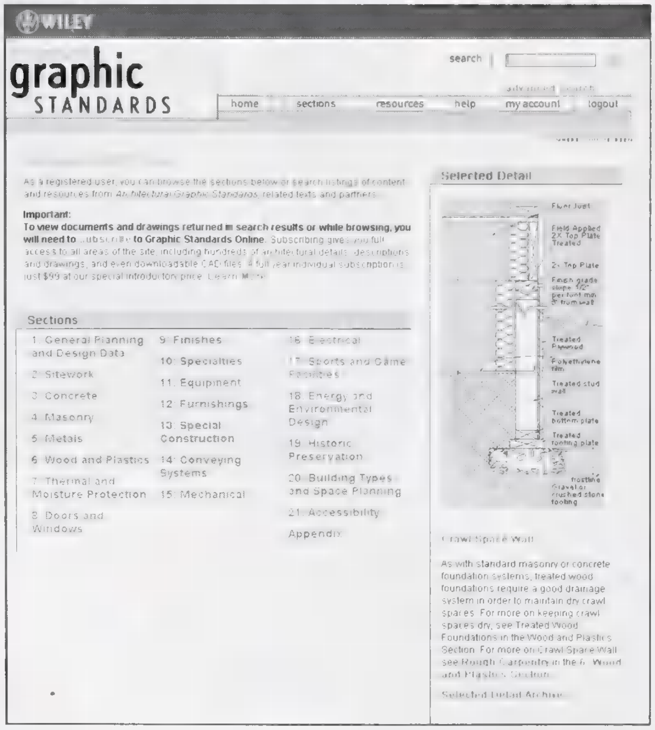
I'm well aware that none of the architects regard their designs as finished proposals. They had only 11 weeks to tackle an enormously difficult problem. It's safe to say that whatever eventually emerges won't resemble any of these flashy skylines. The LMDC will pick a team—and all of the teams, certainly, are competent—and only then will the team get down to the actual work of design. Maybe then they'll finally challenge the program, which, after all, is something any creative and responsible architect normally does. Think of these proposals as marketing moves. They're gaudy diagrams to catch the eye. But as diagrams, most of them are a little scary. They're as puffed up with their own egos as they are contemptuous of the older city around them. And speaking of ego, it's amusing to report that one competitor pasted paper over its office windows so no one could steal the genius ideas being fomented inside.

I CONFESS TO BEING SEDUCED BY SOME OF THE DESIGNS AS PURE ARCHITECTURE. BUT THEY'RE FANTASIES.

Libeskind's scheme

All that said, though, I confess to being seduced by some of the designs, viewed as pure architecture. They're fantasies, but they're compelling fantasies. Fantasies and utopian proposals, of course, have their place in the history of architecture, although that isn't how they're being billed in this case. My personal favorite is the one by Daniel Libeskind, designer of the Jewish Museum in Berlin. Libeskind makes two superb moves. He leaves the excavation untouched: the so-called "bathtub," 75 feet deep and lined with the old concrete retaining walls that function as dams to keep out the water of the Hudson River. He proposes this raw excavation as the site for a future memorial to 9/11. It is a setting with the grim vacuity of an Anselm Kiefer painting. Above this space, he cantilevers a crystalline glass memorial museum. On the rest of the site, he arranges a family of towers that look like shards of glass. They rise in a spiral to a green garden at a height of 1,776 feet. It's all quite wonderfully beautiful. It's also totally impractical. How do you maintain a vertical garden inside a slim glass spike a quarter mile up in the air? But as an image to bear in mind, as a sort of Oz-like, unattainable ideal, Libeskind's design is valuable. Despite its great height, it would carry the pincushion skyline of Manhattan to a climax, instead of overwhelming and trivializing it, as the old Twin Towers did and the other new schemes do. I wish the other equally impractical designs shared Libeskind's deft sense of form.

It's only fair to note, as everyone has, that one scheme, the Peterson/Littenberg one, does lack ego gestures. Like the others, it fails to challenge the banana-brained program, but it succeeds in distributing that program on the site in a modest, sane, and even conventional manner. Although I wouldn't particularly mind seeing it built, I agree with those who feel that something more is called for. That something is not a big show-off idea, not an Everest of verticality, not tired futurist cartoons. What is called for is a sense that an opportunity has not been lost to think long, hard, and freshly about the real issues of the city at the beginning of the 21st century. ■



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Appendix

Crawl Space Wall

As with standard masonry or concrete foundation systems, treated wood foundations require a good drainage system in order to maintain dry crawl spaces. For more on keeping crawl spaces dry, see Treated Wood Foundations in the Wood and Plastics Section. For more on Crawl Space Wall see Rough Carpentry in the 6. Wood and Plastics Section.

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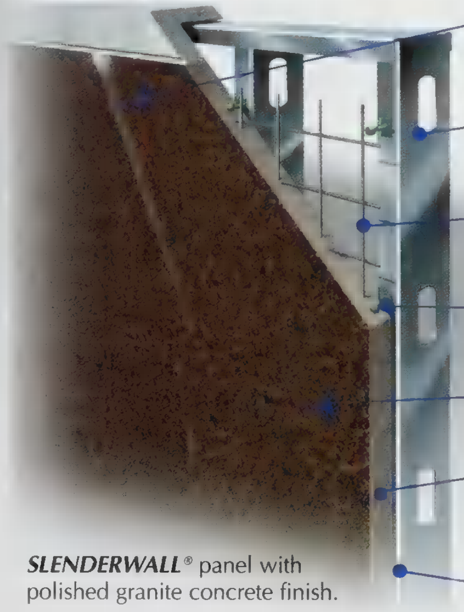
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From the roof of city hall to rows of bungalows, Chicago goes green

Correspondent's File

By John E. Czarnecki, Assoc. AIA

Chicago, best-known as the City of Big Shoulders and the Windy City, is now making strides to become one of the "greenest" cities. Under Mayor Richard M. Daley, Chicago has initiated a number of pilot projects in the past four years to demonstrate how it can conserve energy, build new sustainable structures, and retrofit existing buildings to be more environmentally friendly.

Much of the capital for the city's green initiative comes from a 1999 $700 million settlement with utility Commonwealth Edison (ComEd) in an arbitration case. The settlement required ComEd to undertake projects designed to meet Chicago's electrical power needs in an environmentally sound manner. The city's department of environment (DOE) has guided many of the projects, in conjunction with ComEd.

Since 1999, the city has used the Leadership in Energy and Environmental Design (LEED) green-building rating system as a guide for competitions, adaptive reuse projects, renewable energy installations, and evaluation of prototype police stations and libraries.

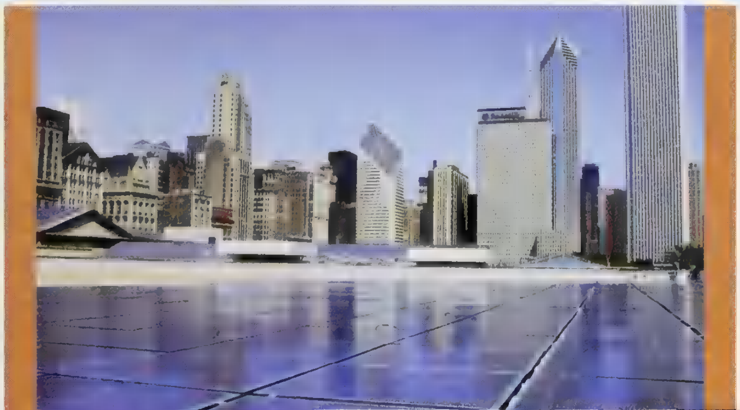
Chicago has a goal to get at least 20 percent of its power from renewable sources—solar, wind, and landfill gas-to-energy—by 2006. In terms of wind power, the city is actively pursuing purchasing a wind farm or taking an equity stake in one.

The city has entered into the Chicago Solar Partnership with a number of organizations, including British Petroleum, Chicago Public Schools, and ComEd, to install photovoltaic panels on a number of buildings, as well as to "make the Chicago Public Schools the largest school-based solar-energy network, and a leader in environmental-technology education," according to the partnership. Solar panels have been installed on the roofs of six of the nine major Chicago museums as well as many Chicago Public School buildings. The panels installed in June 2001 on the Field Museum of Natural History have an average annual electrical output of 53,200 kilowatt hours, and those on The Art Institute of Chicago (pictured, top right) have an average annual electrical output of 56,357 kilowatt hours. The power generated by the panels is fed back into the city grid.

Another project, the Chicago Urban Heat Island Initiative, has been established to reduce urban air temperatures, ameliorate the effects of dark surfaces, and reduce pollution. More than 60 percent of Chicago's rooftops are dark and absorb and trap heat emitted from the sun. This phenomenon—an Urban Heat Island—increases urban temperatures 6 to 10 degrees Fahrenheit over rural temperatures. To lessen the effect, the city is beginning to replace asphalt in alleys with lighter-colored paving, construct light-colored roofs, and install rooftop gardens.

The most widely publicized Chicago rooftop garden—Chicago City Hall (pictured, middle right)—has more than 20,000 plants on 20,300 square feet of roof space. Planted in fall 2000, 95 percent of the vegetation survived the first winter. Designed for low-maintenance plants, the planted portion of the roof has performed admirably and draws a striking contrast with a portion of the same building's roof, over Cook County offices, that has a black-tar surface. On one of the hottest days in 2002, the DOE says the surface temperature was 86 degrees Fahrenheit in the planted areas and up to 168 degrees on the black-tar surface. The average daytime air temperature was 90 degrees above the City Hall garden compared to 102 degrees above the black-tar roof.

The city has spread its green influence from rooftops to the neighborhoods, as well. The Chicago Green Bungalow Initiative has begun



Chicago has gone green with photovoltaic cells on the roof of The Art Institute of Chicago (above), a green roof on city hall (right), and the Green Bungalow Initiative (below).

PHOTOGRAPHY: COURTESY CITY OF CHICAGO

as a demonstration of sustainable techniques to renovate and landscape bungalows, with partners including the city's DOE and department of housing and the U.S. Department of Housing and Urban Development. The 6400 block of South Fairfield has been selected by the city as a model block for the initiative, and four homes on the block have been renovated to be energy efficient, with features including solar photovoltaic panels, new furnaces, tankless hot-water heaters, and new insulation throughout.

Perhaps the best and most visible Chicago example of sustainable adaptive reuse of existing infrastructure is the Chicago Center for Green Technology (pictured, top right). A 1952 West Side foundry, the building has been dramatically renovated for the Chicago DOE as an office building by Chicago firm Farr Associates. The $5.4 million renovation was completed in summer 2002 with 37 percent recycled materials, both a green roof and rooftop photovoltaic panels, high-performance windows with shading devices, and elevators that run on vegetable oil. The brownfield land in back of the building has also undergone a $9 million cleanup.

With installation likely to begin this year, Chicagoans will soon be well-informed about sustainability when they see a number of kiosks in city parks designed by OWP/P Architects for the Chicago Park District and the Exelon Corporation. Each information kiosk (pictured, middle right and bottom) will showcase photovoltaic technology, have a map of the park that it is in, and text about photovoltaics, solar energy, and alternative energy sources. With the kiosks, the city recognizes that an informed citizenry will help further Chicago's green initiatives. ■

Chicago's green initiatives include the Chicago Center for Green Technology (above) and kiosks (left and in the photomontage below) that will be in Chicago parks.

(TOP); OWP/P ARCHITECTS (BOTTOM TWO)

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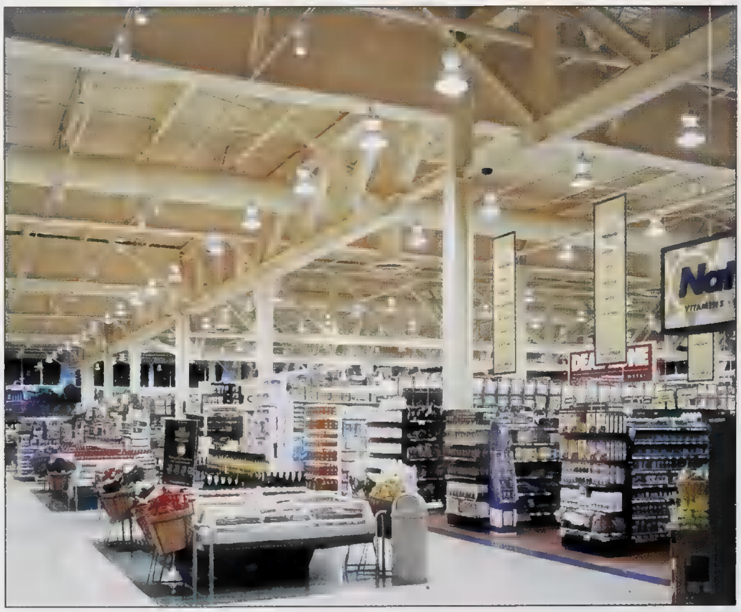

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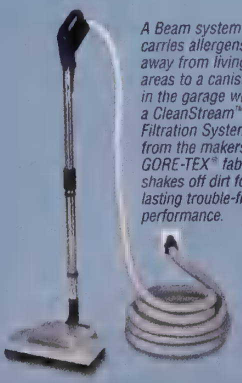

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For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

archrecord2 has been around long enough now (the section is a month shy of its second birthday) that designers who have been featured here are turning up in other parts of the magazine, or in other magazines altogether. This month, archrecord2 celebrates its alumni's success with two repeat performances: one from a Colorado firm that designed a House of the Month that appeared on architecturalrecord.com, and one prequel to next month's Design profile.

DESIGN

Going modern in the land of antlers

The members of Studio B, a group of designers based in Aspen, Colorado, want to buy the building in which the firm is based, a warehouse space on the edge of town. When the transaction finally goes through (and according to Scott Lindenau, Studio B's principal, the current landlord is encouraging the deal), the firm plans to transform its space into a series of intersecting geometric volumes. The open work space of the office would be preserved, with all of the designers (six at the moment, with a seventh due to start this month) within shouting distance of each other.

This planned space makes an apt metaphor for the collaborative working style of Studio B, which Lindenau founded in 1991. "When you have an open studio where everyone collaborates, it really encourages creativity," Lindenau said. He likened Studio B's working style to an architecture school's design studio, with the same atmosphere of collaboration, late-night jocularity, and shared purpose.

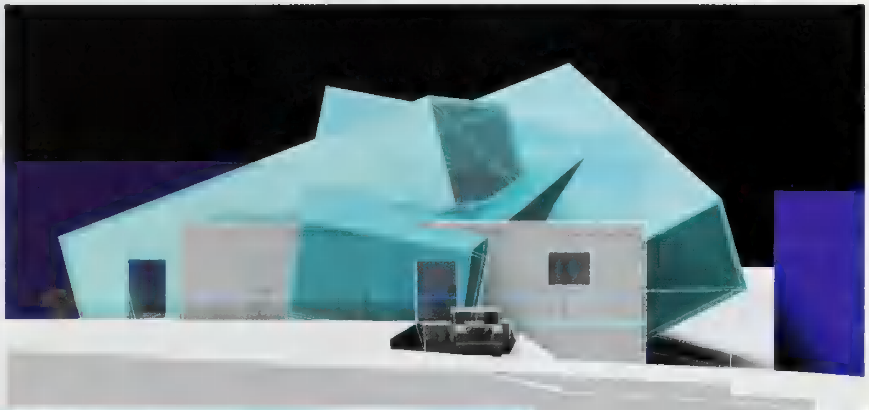
"Scott's our leader," said Derek Skalko, a member of the firm, "but we all do a little bit of everything, and we all know where everything is."

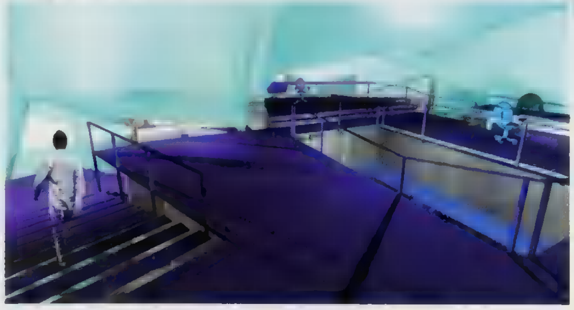
Studio B's collegiate atmosphere actually includes the classroom, since Lindenau requires that everyone in the studio take two or three classes per year, which Lindenau pays for. The firm's Web site (www.studiobarchitects.net) even exhibits the nonarchitectural artwork of studio members.

Lindenau also covers about half of the cost of the firm's annual two-week sabbatical. The whole office closes down, and everyone travels together, drawing and painting as they go. In 2001, the group went to Berlin and Prague; in 2002, they split their time between Spain and Morocco; and the spring 2003 trip will take the group to Helsinki and St. Petersburg.

Such official beneficence would lead observers to conclude that Studio B has a history of financial success, which seems odd considering Aspen's tradition of conservative architecture and Studio B's distinctly modern bent. Lindenau, though, seems to have timed the studio's existence perfectly.

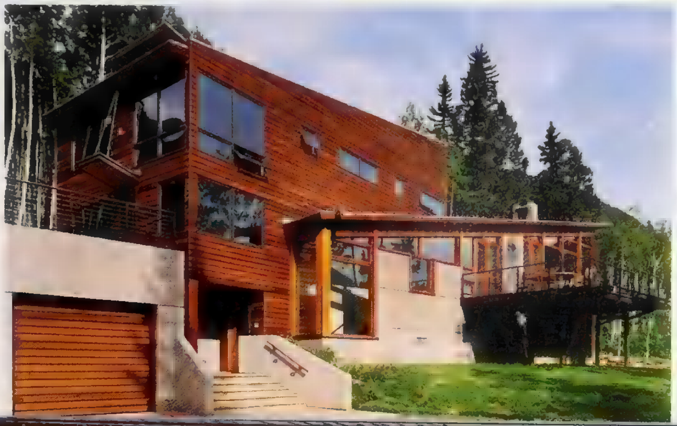
"A lot of the people moving to Aspen now are younger wealthy people who care about modern design," Lindenau said. He sees the studio's work in part as





"The Hive," Studio B offices, Aspen, Colo., 2002–2003
Designed as a renovation of the firm's own offices, a warehouse near downtown would become an open, multilevel work space, modeled around the studio's collaborative working style.

Del Balso Residence, Aspen, Colo., 1999–2000
Also known as "Conundrum House," this house's simple palette of sandblasted concrete and mahogany siding allows the building to merge with the natural beauty of the forested site.



PHOTOGRAPHY: © WAYNE

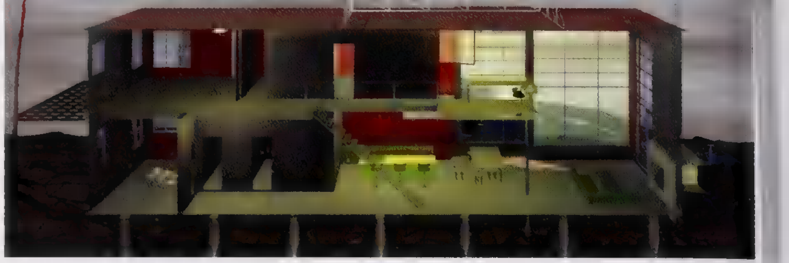
(continued from previous page) a reaction against what he calls, "the really criminal architecture of the West, with its sloping roofs and antler chandeliers."

Lindenau, who grew up in the upper Midwest, came to Aspen partly by chance. He drove cross-country in the mid-1980s interviewing for jobs, and found one in Aspen. When he left to start his own firm, he stayed in town. "Sometimes I miss living in an urban area, where we could work on larger-scale projects," he said. "But I always felt that if we remained true to our convictions, then the work would follow."

His first break was the design for his own home, a significantly modified, double-wide trailer on a lot in the Smuggler Trailer Park. "In Aspen, which is one of the most expensive places to live, our only option was a trailer," he said. "My wife and I bought it for $55,000. Now it's worth $1 million."

Lindenau's million-dollar trailer wound up in several magazines, and Studio B has had a solid residential design business ever since. Lately, the firm has taken on some larger projects, including a low-cost housing project (featured as House of the Month, September 2002, on www.archrecord.com), and a master plan for Aspen's civic center. So despite Lindenau's occasional qualms, Aspen seems to be working out just fine for Studio B. "I feel very fortunate to live in a place where we can get work done," Lindenau said, "and where it's sunny every day." *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 for more of Studio B's projects, including a link to the firm's appearance in House of the Month.



Bergen + Czech Residence, Aspen, Colo., 2002–2003

An entry ramp slopes through this house, eventually becoming a cantilevered deck with views down the adjacent creek. The house rises on pilotis to protect it against possible flooding from the creek.

Lindenau Residence, Aspen, Colo., 1996–1997

Studio B earned some early recognition for this modified trailer home, in which Lindenau found new applications for standard lumberyard materials.

WORK

Building furniture to stay afloat

Sometimes, when an architectural firm is just starting out, the completion of actual architecture relies on the kindness of friends: friends who are willing to take a risk on unproven designers, but who are, unfortunately, unwilling to pay.

Freecell, a young firm that is based in Brooklyn, New York, found a way to get through this start-up period, and even earned some early press coverage in the process. Their tractor chair, a desk chair fashioned from a seat intended for use on industrial machinery, has been featured in several publications and is available for sale on the firm's Web site (www.frcll.com).

Freecell now produces a range of furniture, including the "Seat Storage" system (at left), which functions as seating and shelves; and the Rolling Office Partition (above).

The four members of the firm fabricate the furniture in their studio, where they also build some of their architectural work, such as an apartment with a Murphy bed that they have been designing and building, off and on, for several years. The client is one of the firm's pro bono cases, so this project gets attention between those of paying clients.

Freecell's architectural work, including this apartment, will be featured in archrecord2 in the March issue of ARCHITECTURAL RECORD. More of the group's furniture design can be found online. *Kevin Lerner*

To see more of Freecell's furniture, go to architecturalrecord.com/archrecord2

On the Web, archrecord2 maintains an archive of all of the previous design profiles, career articles, and lifestyle features that have appeared in this space. Find them at architectural record.com/archrecord2, along with our monthly forum.

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Getting your firm ready to green up its architecture

Practice Matters

By Dan Heinfeld, FAIA

Although most architects agree that making their buildings green is the right thing to do, for years those who really pushed sustainable design were thought to be working on the fringe. Now, green is no longer a novelty, but a fact of life for architects.

One question that seems to confront all practitioners is whether their firm is ready to change its design approach from one that tacks a few green features onto its buildings as an afterthought, to one that creates buildings that are sustainable in a truly holistic sense. It can be a huge change for architects and clients alike.

Some of the objections to doing green design are easy to anticipate. Cost usually comes up first. Many people think of green buildings as prototypical and assume they are too expensive for "real world" use. This is less true today than it once was. One reason that green buildings are more affordable these days is that prices for highly efficient materials, systems, and fixtures have been dropping. Many strategies for improving a project's sustainability can be added with little additional cost if they are added early enough to be part of the "genetic code" of the design.

Skeptics who joke that buildings must be covered with diagonal wood siding to be green might be surprised to learn that the Premier Automotive Group building (photo below) designed by LPA, in Irvine, California, received the U.S. Green Building Council's (USGBC) comprehensive Leadership in Energy and Environmental Design (LEED) certification. This third-party validation process establishes that a building meets comprehensive performance standards for sustainable design.

A trip to the USGBC's Web site will show that the council has so many influential professional and industry members, and that so many communities are now providing incentives for architects and builders who use green building strategies, that it is unlikely sustainable design is merely a passing fad.

Getting started

There are some simple steps that you can take to help your firm go green. Begin with training. It can be obtained through the USGBC's LEED workshops as well as at many other continuing education venues. Invite your architects to become LEED accredited. Make discussions on sustainability a priority at staff meetings and invite experts on green building for in-house seminars.

Next, add reference materials to your firm's library. The USGBC's *Sustainable Building Technical Manual* and the *LEED Reference Package*, which contains a complete set of tools for LEED design, certification, and professional accreditation, are excellent places to begin. Most professional book publishers are now offering books on sustainable architecture, and there is an abundance of publications from product manufacturers.

Third, true sustainability is not something an architect can overlay onto a project at the end of the design process. An integrated design process looks at the development of a project from the time that ground is broken throughout its entire life cycle. It demands the commitment of consultants. The budgeting process should be comprehensive enough that opportunities for making all parts of a project sustainable can be identified early and money can be shifted where it will best meet the project's green goals. A comprehensive analysis would consider the benefits of trading a costly and environmentally insignificant feature—a granite facade or showy lobby, for example—for extensive site landscaping that would shade the building from the hot summer sun, reduce heat islands in a parking lot and on walkways, and increase the overall beauty of the project. The firm I work for believes in this approach so much that we have created value-engineering software to analyze green alternatives to standard systems and building materials.

The LEED-certified Premier Automotive Group headquarters building in Irvine, Calif.

Finally, involve your client in every green-design decision. Client resistance usually evaporates when you can demonstrate that making a project sustainable will not incur a substantial increase in cost. Few clients are likely to say, "Give me the environmentally insensitive building over the sustainable one," any more than they would purposefully select an ugly design over an attractive one.

Once your firm has built some green projects and you are able to demonstrate the firm's green-design skills, you will have a track record you can make a part of your marketing program. Many firms that have already made the leap to green are often profiting handsomely from it. These firms also have an advantage in recruiting and retaining employees. Young professionals who feel strongly about the environment and really want to make a difference will be attracted to your firm if you can demonstrate a commitment to environmentally responsible design.

The bottom line

Perhaps the most important reason to do green architecture is that it seeks real solutions to problems involving energy use, water management, and indoor air quality. Architects whose ambition is to design buildings that will stand the test of time can do no better than to develop architecture based on the principles of sustainability. ■

Dan Heinfeld, FAIA, is a LEED-accredited professional and partner in charge of design for LPA, in Irvine, Calif.

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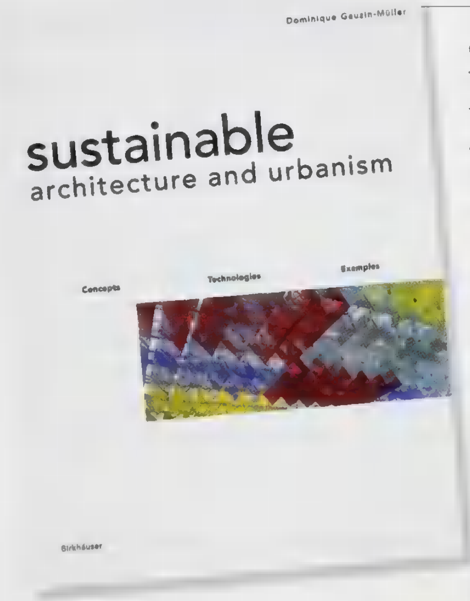
Resources in print for architects and designers who want to build green

Books

Sustainable Architecture and Urbanism: Design, Construction, Examples, *by Dominique Gauzin-Muller with Nicolas Favet. Basel: Birkhäuser, 2002, 228 pages, $70.*



The subtitle of this book could have been "learning from greener Europe." The volume is an elegant overview of issues in sustainable design and their application to mostly small-scale projects in Europe. The author sets the context with a discussion of mounting worldwide attention to environmental degradation and resource limits. Her references to the Kyoto Accords and other international agreements are a reminder of the disconnect between America's current political stands on environmental issues and those of Europe and elsewhere.

Gauzin-Muller describes trends in environmental architecture, including the low-tech/high-tech dichotomy; the "middle way" of environmental humanism; a social and democratic environmentalism focused mostly on low-cost housing; and "environmental minimalism," the recent breed of high-performance, low-energy projects.

Some sections are a bit dry and yet useful. For example, Gauzin-Muller wades through several European rating and assessment tools (including the U.K.'s BREEAM, Holland's DCBA, and France's HQE) to compare and contrast these approaches. Unfortunately, the U.S. Green Building Council's LEED is not mentioned, depriving American readers of what would be the most pertinent comparison.

Six European communities of various sizes serve as urban design and development case studies. Their efforts are progressive, complex, and multifaceted; housing, transit, open space, and other issues seem to have received equal emphasis. The communities' successes are encouraging. But it would have been useful to learn more about the rough spots they faced along the way—policy barriers, political issues, or other stumbling blocks.

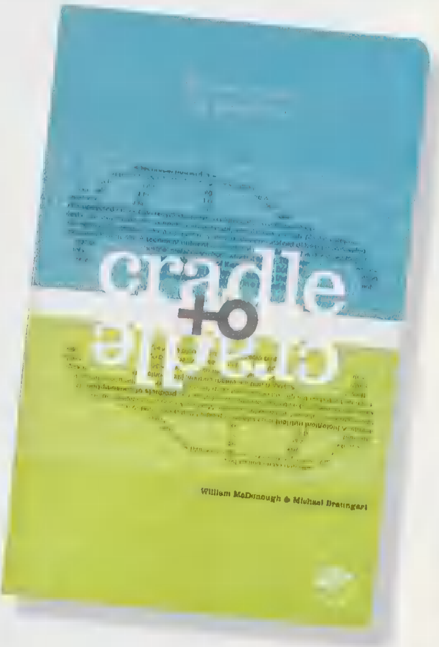
Gauzin-Muller shows and concisely describes 23 architecture projects, from single-family homes to office buildings. Many are small, chosen because they offer sustainable solutions that were executed economically and can be replicated. This collection of work goes beyond the Euro starchitects (though some are mentioned elsewhere). The approach makes the work more inspiring, showing that holistically sustainable projects are achievable by "regular" architects working on regular projects.

Stylistically, the architecture fits the category of sustainable design that emphasizes humanism and Minimalism. Natural light is a dominant theme, and the work has a strong sense of approachability in both form and materials. Elegance and poetry are in healthy supply, although readers looking for the dramatic new green aesthetic might find the architecture too quiet. *Kira L. Gould*

Cradle to Cradle: Remaking the Way We Make Things, *by William McDonough and Michael Braungart. New York: North Point Press, 2002, 193 pages, $25 (paper).*

Cradle to Cradle begins with that all-too-familiar gloomy forecast for our planet that could cause the reader to passively wait for the end, which, by all accounts, appears to be moments away. Everything that is manufactured and necessary for human comfort and production is toxic. Fabrics, carpets, appliances, computers, and toys contain lead, mercury, hazardous dyes, acids, chlorinated and brominated substances, just to name a few. Furthermore, in order to produce all this toxicity, we have squandered our resources and overheated the planet and are now suffering the consequences.

The prevailing moral reflex is to blame our reckless embrace of the destructive tools of progress. Fear and loathing are focused squarely on technology. From there, in a collective paroxysm of denial, we search for antitechnology measures and adopt recycling and conservation as the path to restoration and redemption. Neither will work, say the authors—architect William McDonough and his business partner, the chemist Michael Braungart. In fact, both approaches are illogical. Less is not more. Using less energy does not produce more natural resources. Using less just prolongs the inevitable. And the authors don't feel any more positive



about recycling, correctly renaming the well-intentioned, albeit feeble, activity "downcycling." After all, the products are still going to end up in the dump eventually.

Although they tend to repeat themselves by the end of this manifesto, McDonough and Braungart have some radical ideas. Technology is not the culprit; in fact, human invention and ingenuity are what's going to save the planet. By creating products that return harmlessly to the earth ("biological nutrients") and by manufacturing materials that continue to circulate without degrading ("technical nutrients"), we will create a regenerative system, called "eco-effectiveness." Although there are no formulas, the authors offer scientific principles and issue intellectual challenges. All of them can be reduced to a single paradigm: Reinvent in order to replenish. For instance, don't design a car (or a house) that releases minimal or even zero harmful emissions, design one that releases positive and useful emissions. Easier said than done, but the logic is beautifully simple. *Sara Hart*

Groundscrapers + Subscrapers of Hamzah & Yeang, *by Ivor Richards. New Chichester, U.K.: Wiley-Academy, 2001, 260 pages, $65.*

This book presents some groundbreaking ideas about ground-healing architecture. It shows how we might design and build large buildings in a way that is in harmony with nature. It explores the notion of low-rise ecological structures as seen in the work of Malaysian architect Ken Yeang, whose firm Hamzah & Yeang has pioneered climatically sensitive high-rise design.

"Groundscrapers" are those buildings that "touch lightly" upon the ground, doing a minimum of damage to the ecological systems found on the earth's surface. "Subscrapers" are buildings that live underground, their roofs becoming part of the landscape and converting the excavated site into a natural habitat that may never have existed.

Groundscapers and subscrapers reach out into the landscape as mid-rise buildings that potentially have a greater environmental impact than skyscrapers because they have much larger footprints for the space they enclose. Described as the antithesis of the environmentally responsive skyscrapers that Yeang is famous for, the designs and ideas presented in this book are not antithetical, but rather complementary. While Yeang's skyscrapers are models of energy efficiency and sustainable design, groundscrapers and subscrapers can mend incisions made by building on the land.

After September 11, 2001, many asked if we should ever build skyscrapers again. While today such questions seem an emotional overreaction to the moment, Yeang's architecture gives us a glimpse of what that idea might actually mean, and how a more environmentally responsive architecture might be achieved by building low.

As Yeang explains the princi-

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les of groundscraper and subcraper design, the critical element urns out to be linked and continuusly vegetated planting zones, ecological corridors."

These corridors help to balance the biodiversity of buildings, which traditionally are intruders in an area's flora and fauna. Yeang sees such ecological corridors as restorative, bringing back the biodiversity of brownfield sites and ecologically challenged areas that suffer from previous development. He conceives of buildings as contiguous with the landscape, alive with greenery growing over, through, and around them.

As Yeang explains: "This design endeavor becomes one of the creation of new ecological habitats, which has previously been nonexistent." The lesson of groundscapers and subscrapers is that, in Yeang's words, "by appropriate design, we can actually contribute positively to the biosphere's ecosystems by enabling the increase in the biodiversity of the locality."

By reintroducing natural environments in a world that is becoming increasingly artificial and paved-over, such buildings have the potential to improve the quality of the microenvironment and decrease "heat-island" effects.

Ultimately, Yeang sees these buildings as not only oases in the city, but links in a green chain, covered in grass and flowers, that extends in all directions throughout the city, blending built form with land form. In such a world, architecture and nature not only coexist, but are symbiotic—twined together in a green embrace.

The bulk of the book presents 25 projects for sites throughout Asia and Europe that explore these ideas and premises in built form. Some have trees thriving inside, others are crowned with fields of green and insert themselves seamlessly within the landscape. Yeang's architecture is not only ecologically sensitive, but (as this book shows) formally fascinating and exemplary.

Michael J. Crosbie

Sustainable Architecture White Papers, *edited by David E. Brown, Mindy Fox, Mary Rickel Pelletier. New York: Earth Pledge Foundation, 2001, 324 pages, $17.*

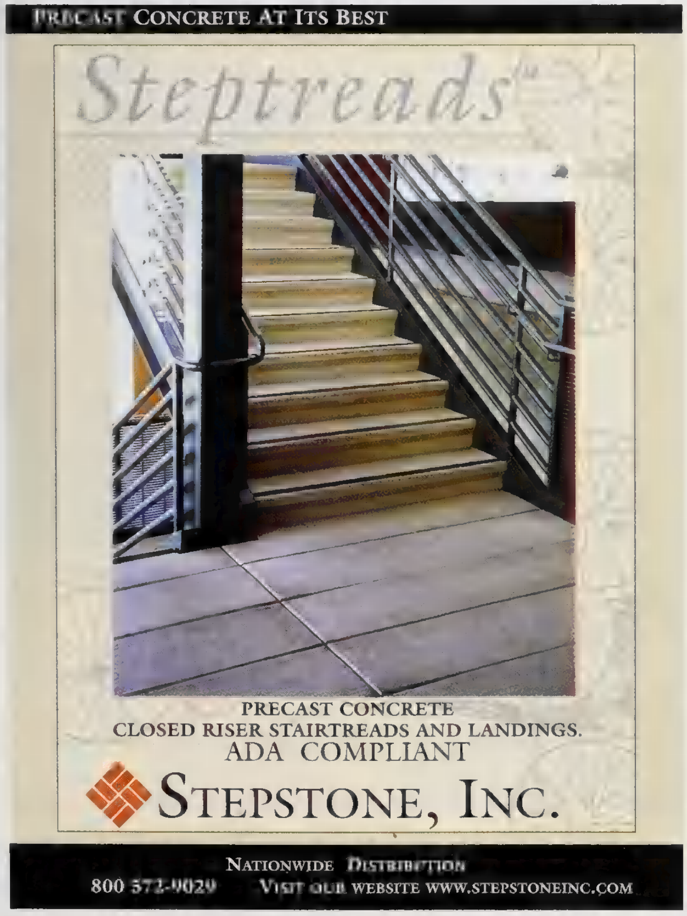
With energy a front-burner issue for the first time since Jimmy Carter donned his cardigan, this 4-by-7-inch volume of essays on sustainable design is timely. Among the questions tackled by the Earth Pledge Foundation's little handbook are: If we are to make better use of our limited supply of water, wood, energy, and land, how do we build, now that there are six billion of us? How do we make zero-emission houses? How do we create structures that can eventually be harmlessly reincorporated into the land?

Contributors to the volume include William McDonough ("Eco-Effectiveness: A New Design Strategy"), James Wines ("The Art of Architecture in the Age of Ecology"), the late Samuel Mockbee ("Building Dreams: An Interview with Samuel Mockbee"), Harry Gordon of Burt Hill Kosar Rittelmann Associates ("Sustainable Design Goes Mainstream"), Robert Watson and Adam Cox of the Natural Resources Defense Council ("The Eco Office: Tomorrow's Workplace, Today"), and more than 50 others.

Some of the essays are brilliant, some are not. They are grouped under the headings of practice, building community, public works, homes and schools, products and materials, and resources.

Taken together, the reports address sustainability as incorporating social, institutional, and spiritual aspects of life. Samuel Mockbee, who was founder of the Auburn Rural Studio, writes, for example, "The smart architect thinks rationally about a combination of issues including sustainability, durability, longevity, appropriate materials, and sense of place. The challenge is finding the balance between environmental and economic constraints."

Andrea Oppenheimer Dean



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In Washington, a showcase for sustainability inspires by looking ahead, not back

Exhibitions

By Deborah Snoonian, P.E.

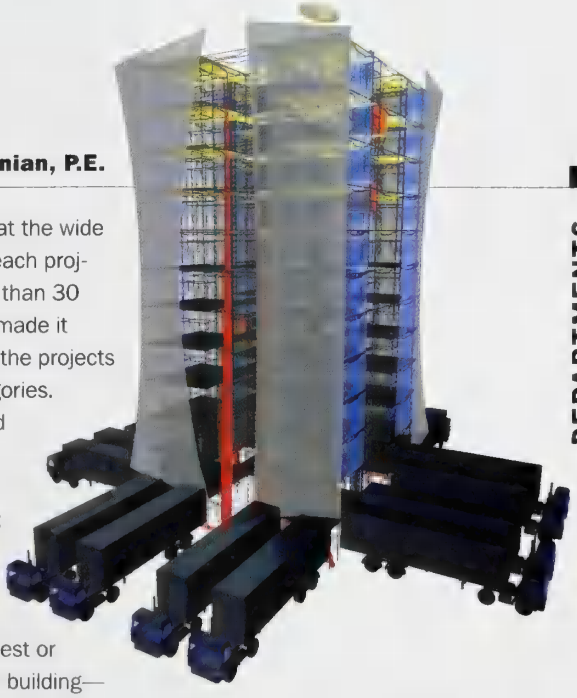
Big & Green: Toward Sustainable Architecture in the 21st Century. *Curated by David Gissen, at the National Building Museum, Washington, D.C., through June 22, 2003.*

It begins outdoors. A wind turbine, 8 feet in diameter and perched atop a 41-foot pole, lurks on the front lawn of the National Building Museum in Washington, D.C. A placard explains that the turbine—which looks like a giant pinwheel—can harness enough energy to power the average American home. “Putting the turbine outside is a way to introduce our visitors to the exhibition material, at a scale that makes sense in their everyday lives,” said Howard Decker, the museum’s chief curator.

Big & Green is the first major showcase for large-scale, environmentally responsible designs from around the world. (At press time, the exhibition had not yet opened, but the full-color catalog [Princeton Architectural Press] as well as computer renderings of the gallery installations were provided for preview purposes.) The show comprises 50 built, in-progress, and unbuilt works presented in sketches and photographs, models and renderings, mock-ups and interactive displays.

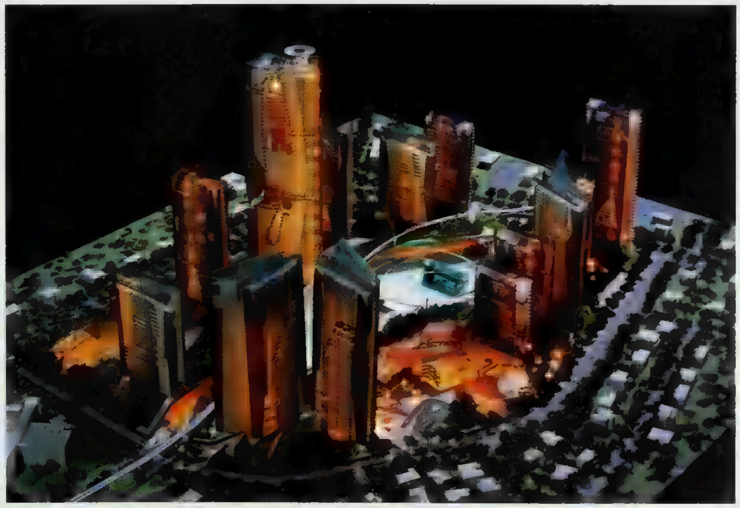
While sustainable design solutions are often explored for small-scale buildings, like single-family homes or service structures in undeveloped areas, the show’s curator, David Gissen, decided to focus on recent large projects “because that’s where the stakes are highest.” Indeed, the projects shown constitute something of a This-Is-Big-Green-Building-Today compendium. The oldest project dates to 1980 (the Best Products Company Forest Building, in rural Virginia, by James Wines’s firm SITE Projects), but most of the completed work is less than five years old.

Gissen gathered a small group of advisers to help select the projects, which were assigned to one of five categories based on their primary environmental benefits: energy; light and air; greenery, water, and waste; construction; and urbanism. This turned out to be a simple way to organize the exhibition catalog, but don’t expect to find the same one-to-one correspondence at the museum. “We moved some projects around to different categories because we discovered more information about them after the catalog went to press,” said Decker. He added that the wide variety of media for each project—there are more than 30 models on display—made it challenging to group the projects in their original categories. Recyclable cardboard tubes are used as a structural element in the exhibition design; if successful, they will make visitors feel like they’re walking through a forest or a partially completed building—both places in transition, as green architecture itself is right now.



FTL’s portable 12-story building can be erected on-site in two weeks.

As for the building types and styles, this show is an architectural bouillabaisse. There are skyscrapers and master plans, sports arenas and apartment buildings. “This is not a theoretical exhibition,” stressed Decker. The same can be said of the entire oeuvre of green projects, especially commercial and institutional buildings: Although common features include indoor atria, roof gardens, and solar panels, the forms these solutions take in different projects and locations resemble each other about as much as a Volkswagen Beetle resembles an actual insect.



T.R. Hamzah and Yeang’s dense high-rise campus for a Malaysian university includes a technology center, labs, convention space, and student housing.

That’s not to say themes don’t emerge. Most of the projects appear in dense urban areas (not surprising, given their scale). Non-American work is represented heavily in the mix (31 of the 50), and a disproportionate number of the U.S. projects are in New York and California, where lawmakers have created incentives to reward developers for sustainable building. The overall aesthetic is more high-tech than woodsy, from the sleek crystalline towers of the Gannett headquarters in McLean, Virginia, by Kohn Pedersen Fox [RECORD, May 2002, page 212] to the rocketlike

IMAGES: COURTESY

Foster and Partners' Swiss Re headquarters in London will be completed in 2004.

Swiss Re headquarters by Foster and Partners, currently under construction in London.

Critics have posited that green architecture lacks panache, and in this exhibition one finds reason to side both with and against them. The award for biggest wow-factor goes to Nicholas Grimshaw & Partners' retro-futuristic Eden Project, with domes that "bubble out of Cornwall's ruined landscape" [RECORD, January 2002, page 92]. Yet it's the theoretical projects that are the most appealing and intriguing: the Carbon Skyscraper, by Peter Testa and his students at MIT; the Recyclable, Portable Fabric Skyscraper by FTL Design Engineering Studio; Richard Rogers Partnership's never-built study for a low-cost housing project in Korea. By and large, the American [illegible]—particularly the completed projects—is not of the same caliber. Call it bouillabaisse without the spicy kick.

An MIT students' model of a light-as-air skyscraper is made of high-strength, resin-treated carbon fiber.

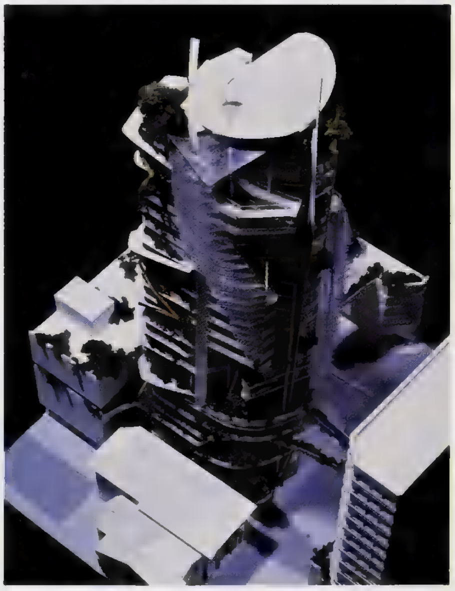
Except for the omnipresent William McDonough, relatively few of the architects shown will be familiar to the general public. McDonough's much-hyped Gap headquarters in San Bruno, California, is featured, as is the Ford River Rouge Center, Albert Kahn's seminal factory complex in Dearborn, Michigan, where McDonough is adding roof gardens and landscaping to cleanse polluted runoff and wastewater. (This could be dubbed "project with the most ironic client," given the abysmal gasoline mileage of Ford's sport utility vehicles.) To those who follow green building, however, the designers represented will not surprise: Croxton Collaborative, Fox & Fowle, Kiss + Cathcart. Granddaddy of them all is Malaysian architect Kenneth Yeang, who coined the term "bioclimatic skyscraper" to describe his pioneering tall buildings that incorporate natural ventilation and vegetation [RECORD, March 1993, page 26; August 1998, page 81].

Many designers who appear in the show also served on its advisory council, and at first blush this might seem self-congratulatory at best and a conflict of interest at worst. But fussing over whose projects were chosen for *Big & Green* is an exercise in splitting hairs. Few clients demand this type of work right now, and a relatively small circle of architects respond to their needs. The work of these firms simply *is* the state of the practice. Whether other designers will take up this mantle for large projects remains to be seen, although the rising adoption of green building standards and environmental-protection mission statements by governments, universities, and corporations makes this seem inevitable.

As for the catalog, Gissen's introduction deserves points for its succinct history of green building. Well-honed essays introduce each of the five sections, and projects are given two-page spreads of images and a one-paragraph summary of their primary features—just enough to provoke interest. Rounding out the content are interviews with designers and a glossary of sustainable-design terms; these are nice touches, even if they appeal only to the most design-savvy. Sorely missed is the casual peruser's handiest shortcut—an index of all the projects with their locations and year completed or conceived.

One important question that remains unresolved is, does size matter? Is there a point at which a project's sheer massiveness outweighs its environmentally friendly attributes? A new football stadium on the west side of Manhattan, designed by Kohn Pedersen Fox, would take up a huge amount of land and create thousands of gallons of runoff during storms—and would be fully utilized, on average, for about eight Sundays per year. But it's designed to power itself *and* add energy to the grid. This conundrum (possibly a moot point, since the stadium's future is uncertain) illustrates the difficulty of weighing the relative benefits and drawbacks of individual projects—something designers struggle with constantly.

We'll still build big. That's a certainty. But sustainable skyscrapers aren't. The strongest work in *Big & Green* is about possibilities, not realities. "We're looking at an architectural condition that's still evolving," Decker said. The exhibition's timing and venue could be seen as either propitious or beside the point, with the Bush administration, mere blocks away, dismantling a generation's worth of environmental regulation and deciding not if but when we will go to war against a major oil-producing nation. No matter what your politics, *Big & Green* brings together thought-provoking projects whose designers envision them coexisting with nature, not dominating it. ■



The EDITT Tower, to be built in Singapore, has a high ratio of planted areas to indoor spaces.

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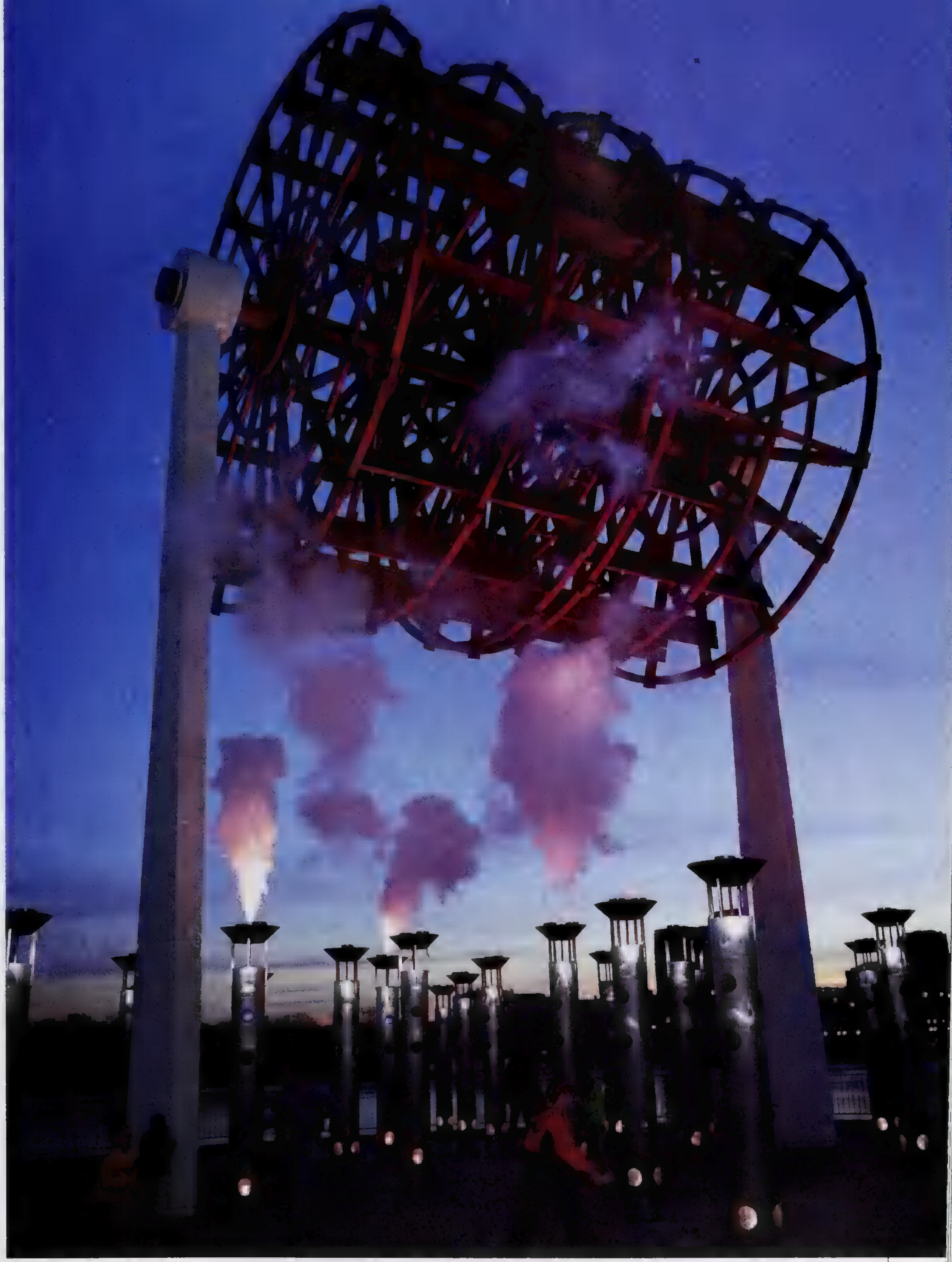

By Ingrid Whitehead

Senses work overtime to celebrate a bygone age

Nostalgia certainly ain't what it used to be. At least, not in Cincinnati, where celebrating the region's past—in particular, the steamboat era—is a full-fledged multisensory experience. As part of the National Steamboat Monument, Whistle Grove, an interactive instrument by artist Christopher Janney, provides visitors with a place to interact with a "living" monument.

Whistle Grove is a three-part construction consisting of a red, three-story paddle wheel and a plaque with an ever-changing riddle installed directly under the wheel. The structure contains 24 stainless-steel columns, and as a person moves among the columns, various steamboat sounds, such as a calliope, a steamboat whistle, voices of rivermen talking about life on the river, as well as steam jets housed at the top of each column, are triggered by photosensors. Texts on steamboat history are strategically placed among the columns, as are lights—some of which are triggered like the sounds. "Public art should work at both the scale of the city and the scale of the pedestrian," says Janney, who is trained as an architect and a jazz musician. "With Whistle Grove, I'm asking people to play with the city." ■

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How green buildings are smarte

By Deborah Snoonian, P.E.

Architects have always aimed to make buildings comfortable and safe, but various forces in effect today make these goals more pressing than ever. Over the past decade, the continued dwindling of natural resources, coupled with studies that demonstrate the adverse consequences of poor indoor air quality, have given rise to an increasing demand for building products whose manufacture, transport, use, and disposal safeguards both environmental and human health. Yet, though using green products is a critical step toward making buildings sustainable (see "What Makes a Product Green?" on page 173), in the long haul, slashing the power consumption of the built environment is what reaps the most benefits environmentally.

The current state of our built environment with respect to this last goal is a mixed bag. According to the Department of Energy, which surveys commercial buildings every four years (see map inset and graphs for more detail), the number of buildings in the U.S. has increased steadily since 1979 while total energy consumption has remained flat—suggesting we have found ways to make our structures more efficient. Yet buildings constructed after 1960 use more energy per square foot than older buildings, which contradicts this assertion. Suffice it to say that, on average, we've got a long road ahead of us—in the U.S., anyway.

But that road is being cleared of obstacles. The nationwide push to make buildings sustainable will hasten the efficiency of new buildings. In the past five years, cities such as Seattle, Chicago, New York, Arlington, Virginia, and many others have adopted green building guidelines and incentives for developers to build efficient structures using renewable power sources such as solar and wind energy. The U.S. Green Building Council has seen a fourfold increase in its membership since the mid-1990s and a growing list of projects undergoing certification. At the council's first national conference, in November 2002, in Austin, Texas (which attracted nearly 4,000 people, more than double the number expected), the workshops and presentations emphasized the merging of the practices of architecture and engineering to fashion buildings more holistically from the design phase forward. This was true of both new construction and retrofits, in which owners have invested in energy-management technologies for systems such as HVAC and lighting to automate energy savings and cut operating costs.

Once in a great while making a structure more energy-efficient can even have spectacular unanticipated benefits. For example, on September 11, 2001, a high-tech energy-management system (EMS) played a role in saving many lives. It prevented millions of dollars in damage to a building whose continued operation was crucial for safeguarding national security. That building was the Pentagon.

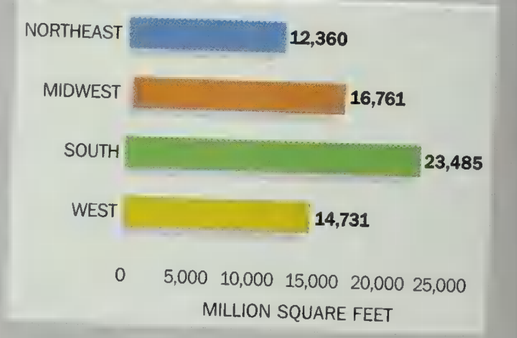
Inside the Pentagon's energy-management system

In the mid-1990s, Steve Carter, who holds the clunky title of real estate and facilities liaison to the $1.85 billion Pentagon Renovation program, was given a mandate: Reduce the energy bill of the Pentagon by 35 per-

HOW MUCH DO BUILDINGS CONSUME?

Every four years, the Department of Energy completes an exhaustive data-collection exercise known as the Commercial Buildings Energy Consumption Survey, or CBECS, which covers commercial buildings in the U.S. of more than 1,000 square feet in size. From this exercise, a dizzying array of data is spun forth, not only on building energy sources, consumption, and expenditures, but also on building size, location, occupancy, and many other factors. Combing through the data reveals a rich set of information about our built environment. A selection of data and trends is presented on these and the following two pages. For more information, visit eia.doe.gov/emeu/cbecs/contents.html.

DISTRIBUTION OF FLOOR SPACE BY CENSUS REGION, 1999



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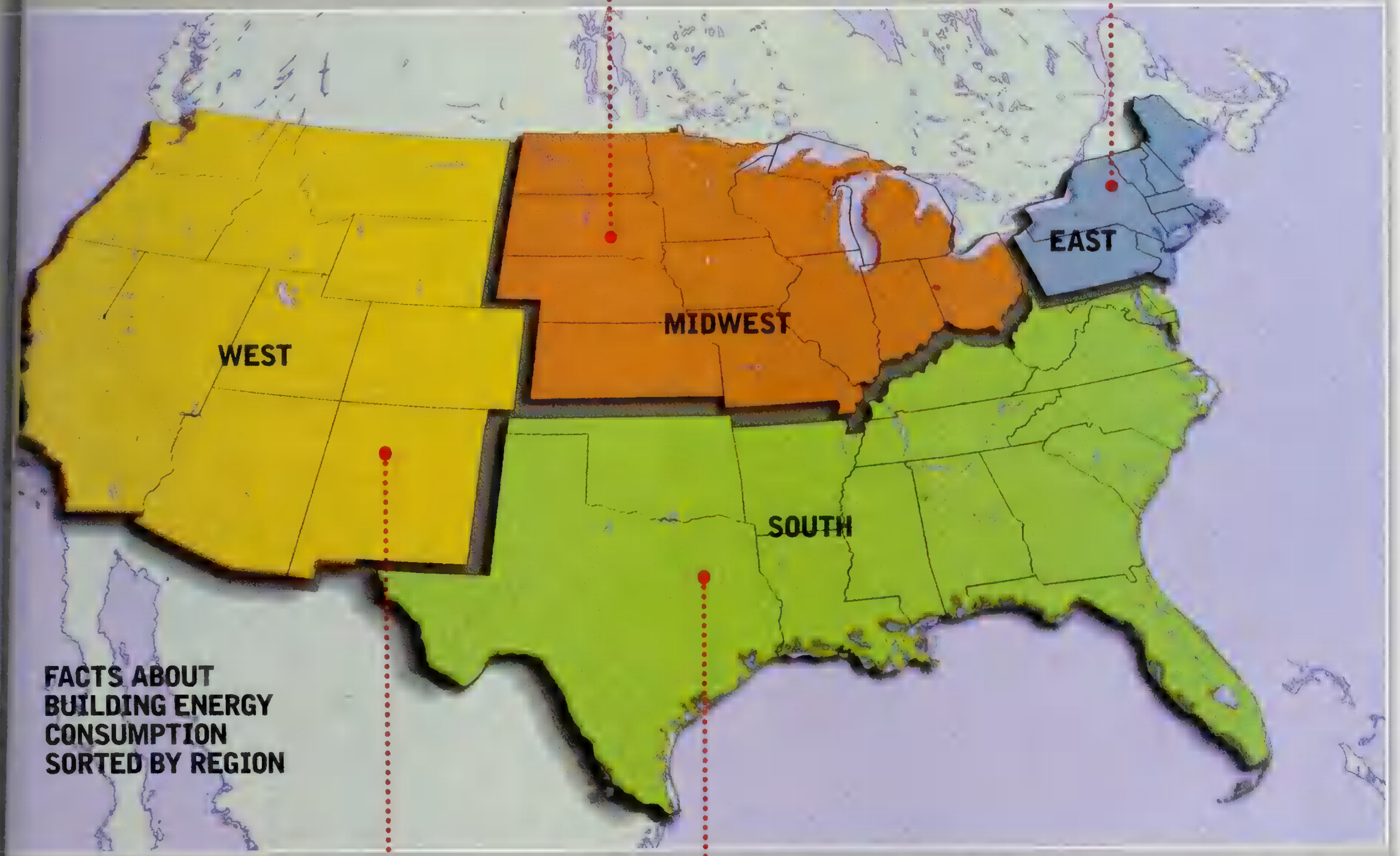
and safer

Energy-saving technology can have unexpected side benefits for building safety and intelligence. One case study shows us how.

Midwestern buildings weigh in between other regions of the country in building size, age, and energy consumption. They are ranked second in total energy consumption, but third in per-building and per-square-foot use of energy.

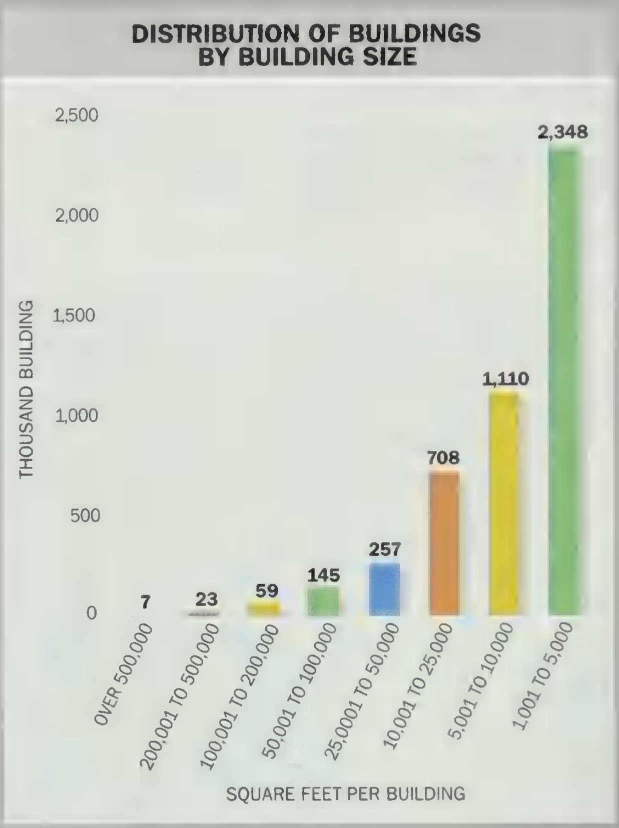
The densely populated East has the highest number of buildings constructed before 1959. The average commercial building size is 18,000 square feet, larger than elsewhere in the country. Its structures use the most energy per square foot.



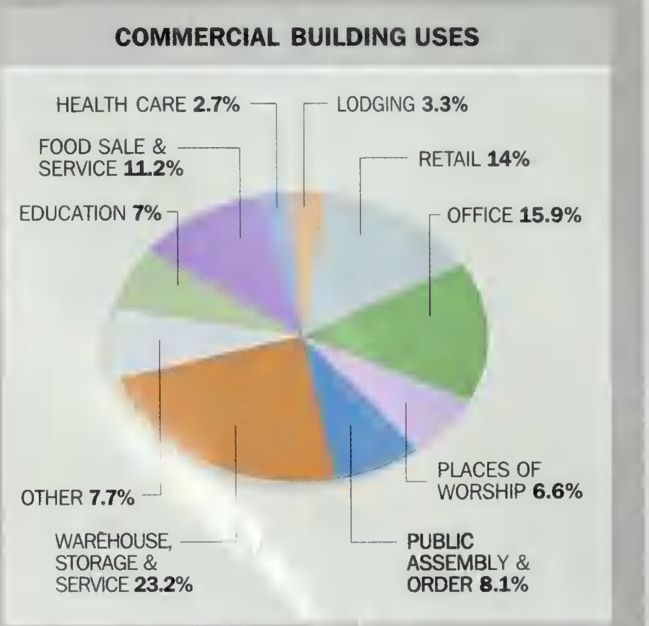
FACTS ABOUT BUILDING ENERGY CONSUMPTION SORTED BY REGION

The states in the West have buildings that are newer, on average, than in other parts of the country. Its buildings also consume the least amount of energy on a per-occupant basis, and only slightly more energy than those in the South on a per-building basis.

As the largest region in the survey, the South has the highest number of buildings and the largest amount of square footage. On a per-building basis, its buildings are the most energy-efficient of the four regions of the country.



Most buildings in the U.S. are less than 5,000 square feet in size. This is where the potential for decreasing energy use is greatest.



Over 500 mechanical equipment rooms are controlled by the Pentagon's EMS.

cent by the year 2010. Carter, an engineer, has worked at the 6.6-million-square-foot Pentagon for more than 17 years and knows its building systems as intimately as a chiropractor knows the spine. What Carter convinced his superiors to do was invest in a new energy-saving digital backbone for the Pentagon.

The primary feature of this backbone is an energy-management system that links together various direct digital control (DDC) technologies to automate the building's HVAC system and make it easier to monitor and manage. Included in the EMS is equipment such as sensors for air flow and temperature, as well as actuators that control the actions of fans, pumps, and motors. DDCs were first developed in response to the energy crunch of the 1970s. Today, all modern HVAC equipment is digitally controlled, and EMSs are a common element of large-building construction because they offer efficiencies in operation that can pay for themselves within two to three years, according to industry groups.

As the Pentagon is renovated section by section, the HVAC equipment will be upgraded in sections as well, with new, DDC-equipped components replacing the old, manually operated ones. When Carter was given his energy-savings mandate, renovation staff were preparing to make over the first section of the Pentagon, Wedge 1. He proposed something radical—while replacing that wedge's HVAC systems, why not retrofit new DDCs onto the existing 55-year-old HVAC system in the other four wedges? And while they were at it, why not centralize the building's operations in a single location?

ON SEPTEMBER 11, AN EMS SAVED MANY LIVES AND PREVENTED MILLIONS OF DOLLARS IN DAMAGES TO THE PENAGON.

The price tag on his suggestions made them unpopular. "Nobody wanted to pay to put new controls on 55-year-old equipment, knowing it would all be replaced anyway during the renovation," Carter recalls of the resistance he faced. Still, he persisted, demonstrating that the investment would pay itself back rapidly in dramatically lower energy bills and adding that consolidating the Pentagon's operation in one location would streamline maintenance. In the end, his wishes were granted. That was in 1997.

The ultimate result was the Building Operations and Command Center (BOCC), which opened in the newly renovated Wedge 1 of the Pentagon on June 8, 2001. The BOCC is like the Pentagon's brain, the place where a network of thousands of DDCs that make up the EMS come together, and where information on the building's condition is collected in real time. In the BOCC, maintenance staff can take the Pentagon's pulse by watching five 90-inch display screens that show data such as room temperatures and pump statuses. They can spot trouble and fine-tune these systems from their workstations, or, if need be, they can also tap into the BOCC's

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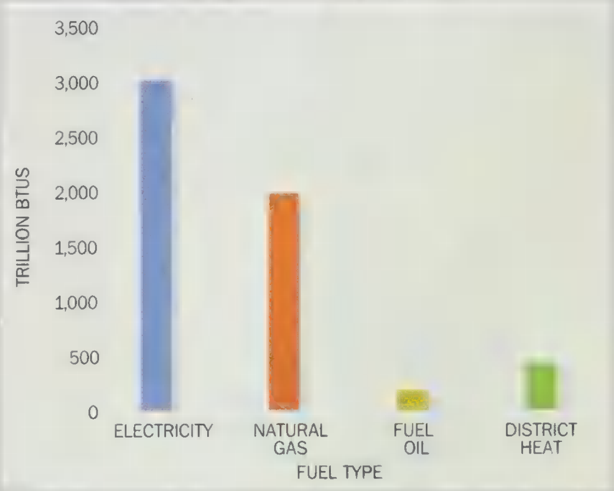
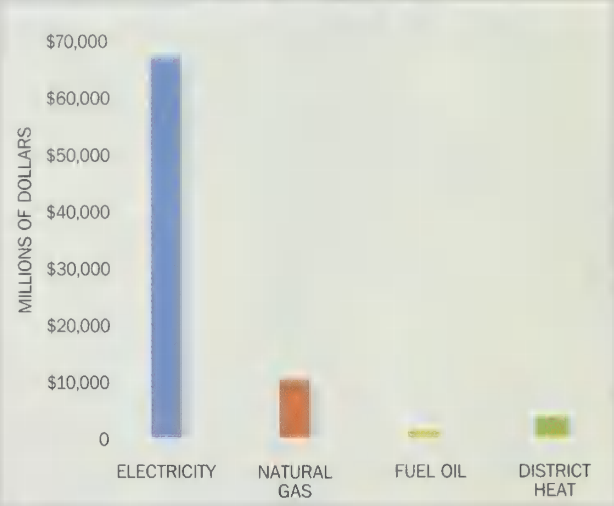
ENERGY CONSUMPTION OF COMMERCIAL BUILDINGS

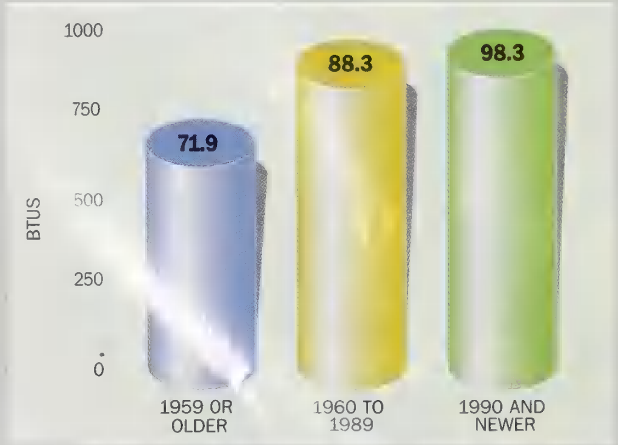


ENERGY EXPENDITURES



Most people are surprised to learn that older buildings use less energy per square foot (below) than their newer counterparts.

ENERGY USED PER SQUARE FOOT, 1,000 BTUS



information system via laptop connections in the Pentagon's 500-plus mechanical rooms. This balance of centralized and distributed building information was both an innovation and a coup for a government-owned building of this size.

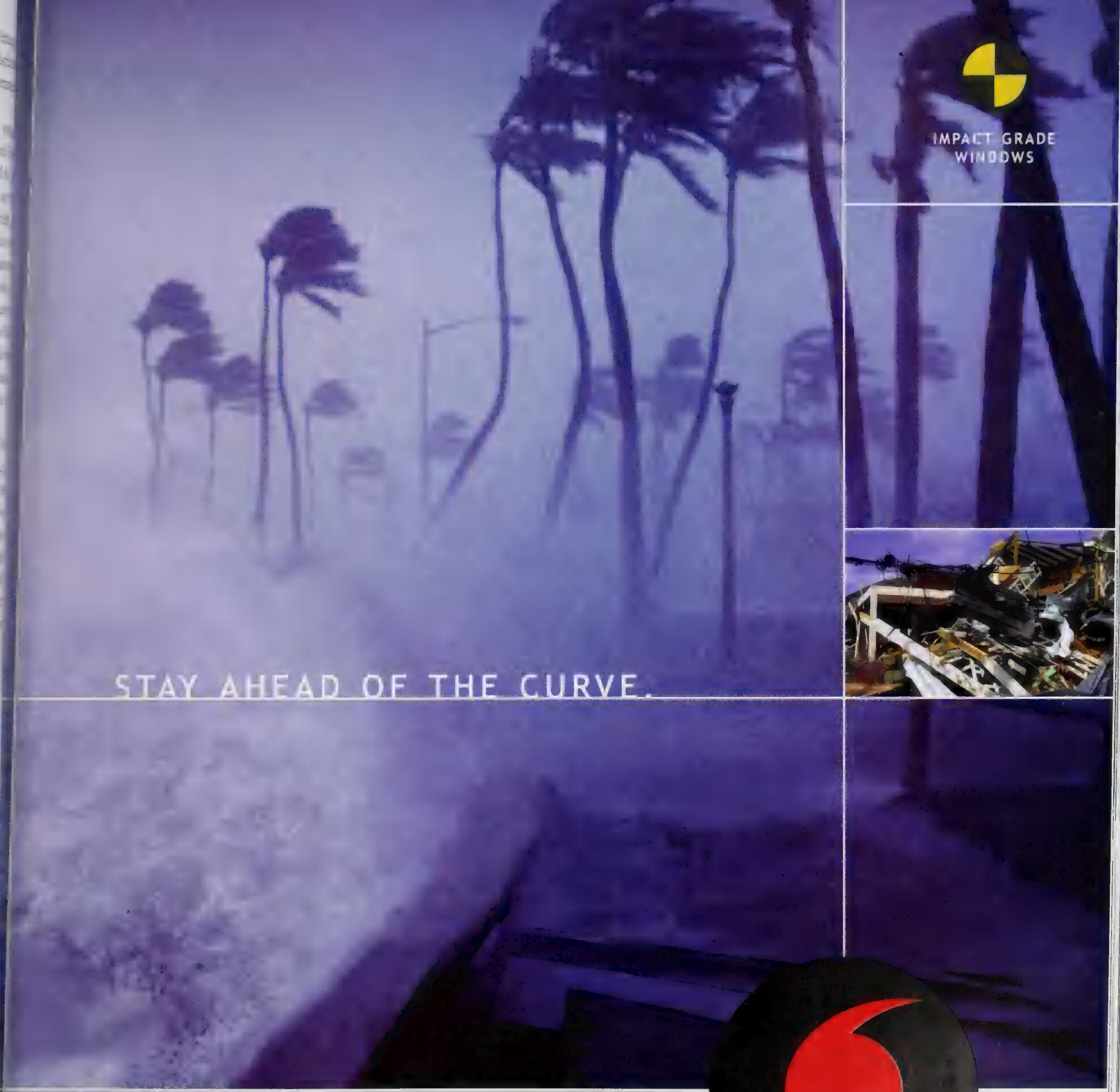
As Carter and his staff began working with the new system, they thought of more capabilities to add on top of the standard EMS technology. "We put in water sensors and leak detectors under all the air handlers, and gas detection where the natural gas system was, so that exhaust fans would be turned on if gas concentrations got too high in some areas, and we made sure the fire-detection system was linked to the HVAC system," he said. "We realized, too, that we could shift air patterns in the building—pressurizing some areas to keep out heat and smoke in case of fire, for instance." A laundry fire in one of the Pentagon's cafeterias in the summer of 2001 proved this was no small convenience: The smoke was tightly contained around its area of origin, and after the fire was doused, engineers were able to desmoke the building in 20 minutes. "The fire department was totally amazed. Everyone was really excited by what we were able to do," Carter said.

But the biggest test of all came on September 11, 2001. That morning, like most mornings, Carter was in his office in the BOCC. He and his colleagues were watching the twin towers burn on television when the plane struck Wedge 1. "All the control boards in the BOCC switched over and showed that the fire alarm system was going off," he said. "We immediately started shutting down some of the air handlers, but our first thought was, nothing could be *this* massive." But massive it was. Shortly after the crash, the BOCC lost power—and the operators lost their ability to watch or make adjustments to the building from there. Carter grabbed a two-way radio and headed to a mechanical room nearby that still had power. From his laptop, he tapped into the BOCC's information system (fortunately still intact) and sent out commands that closed dampers and turned off fans all around the Pentagon to contain smoke and starve the raging fire of oxygen. When he learned that a breached water main had caused the water pressure in the building to dip too low for firefighting, Carter dispatched a few of his engineers to the bowels of the building to remedy the problem. All in all, eight people stayed in the Pentagon on September 11, controlling the fire damage remotely via workstations from various mechanical rooms in the building, with Carter directing the effort by radio.

EIGHT PEOPLE STAYED IN THE PENTAGON, CONTROLLING FIRE DAMAGE VIA WORKSTATIONS IN VARIOUS MECHANICAL ROOMS.

On September 12 the Pentagon reopened. One hundred eighty-nine people had been killed (125 on the ground), and the building suffered $501 million in damages. But the Secretary of Defense's office, the National Military Command Center, and other mission-critical areas such as data storage centers and wiring and switch rooms were spared, thanks to the energy-management system and eight people. Had the building's HVAC system not been automated and centralized—again, with the intent of saving energy, not lives—Carter and his maintenance staff would have faced a grave situation. To control the fire and smoke they would have had to close dampers and turn off fans manually in more than 500 mechanical rooms. Even if it were possible to reach these rooms in the midst of this conflagration, it would have taken many hours to do it.

While what happened at the Pentagon on September 11, 2001, was extraordinary, it speaks volumes about how sophisticated energy-management systems have become in enabling people to control building environments. Architects and engineers are only beginning to comprehend the benefits EMS technology holds for the future. ■



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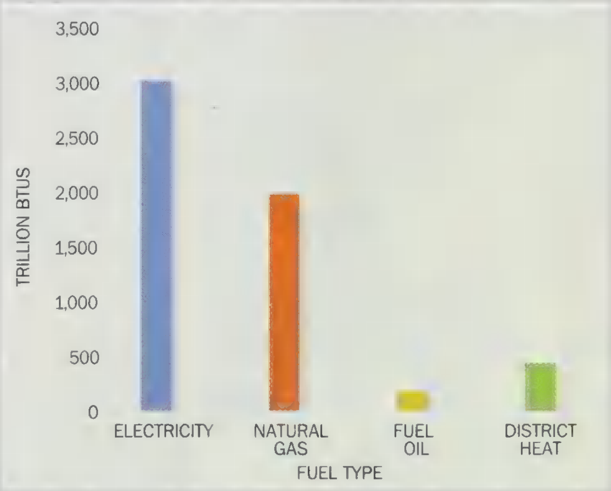
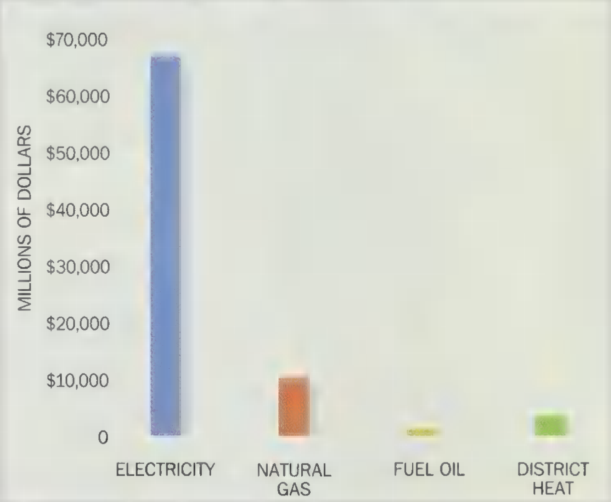


ENERGY EXPENDITURES



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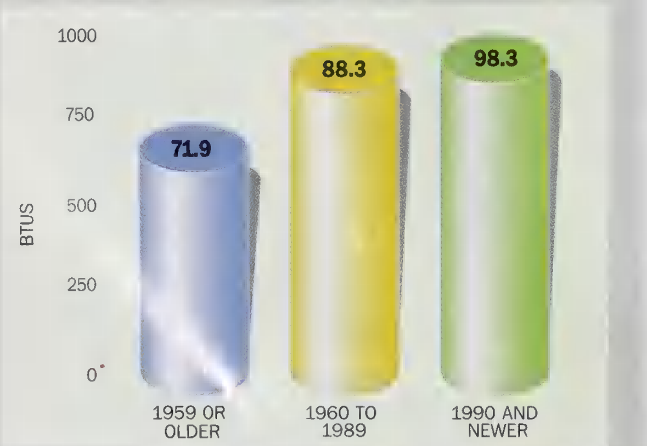

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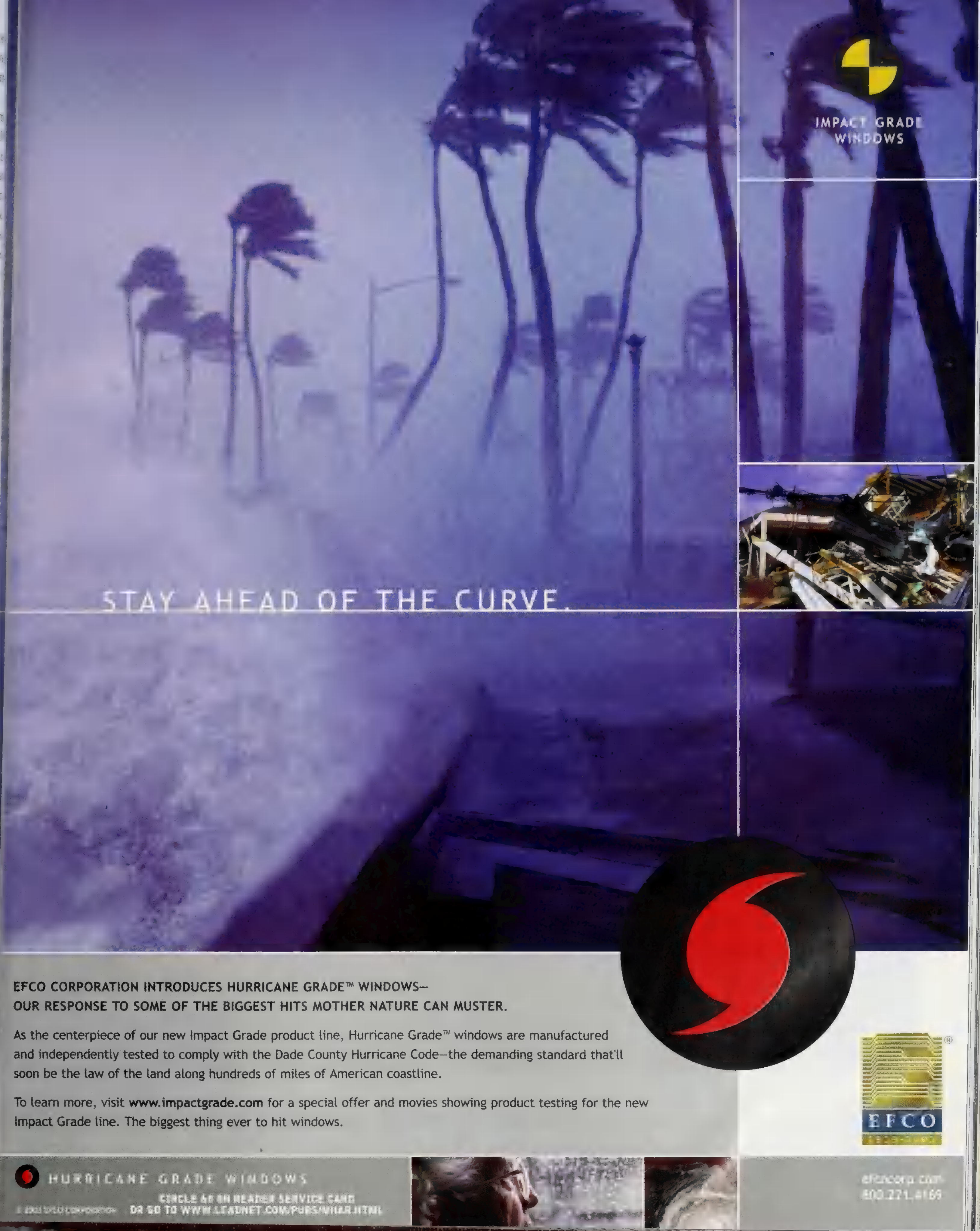

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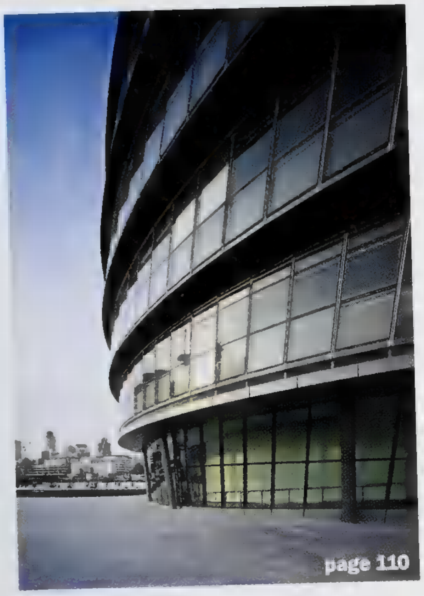


PHOTOGRAPHY: © (TOP TO

Good design no longer needs the "green" modifier

THREE PROJECTS PROVE THAT BEAUTY IS MORE THAN (BUILDING) SKIN DEEP

All too often, the debate about green architecture dwindles into a simple morality tale: Evil Developers who solicit bland, energy-guzzling boxes designed cheaply and fast by mercenary architects versus Earnest Internationals, teams of clients, architects, and engineers who ostentatiously call attention to their use of nontoxic and certified materials. Poised above the fray are the critics who wash their hands of both camps, saying their work does little to provoke thought or stir the soul, much less improve the quality of the built environment or preserve natural resources.

It's time for the argument itself to become sustainable. Living takes resources, and buildings use resources. When searching for work to include in these pages, we sought projects and designers that strike a balance, while also using it as an opportunity to explore ways to protect the environment in form and function, as well as materials.

These three buildings represent vastly different approaches to green building. What looks like Lord Norman Foster's formal whimsy is actually technical prowess of the highest order—the firm relied heavily on computer analysis and modeling to create a building that uses far less than its share of energy. Behnisch, Behnisch & Partner went to extraordinary lengths to ventilate an office building naturally at all times of the year. And at York University's Computer Science Center—a place that, by definition, will become obsolete 10 years from now—Busby + Associates and architectsAlliance took the concept of "plug-and-play" a step further by fashioning a building flexible enough to adapt to future changes with minimal need for retrofits.

In each project, technology was the catalyst between engineering ingenuity and architectural boldness. As a matter of fact, the work represents a long-overdue convergence of old technology with new. Sophisticated software programs allowed engineers to complete complex iterations in seconds, so that, in turn, natural ventilation could be employed for maximum energy efficiency.

These are not perfect projects, but they are projects that advance the state of sustainable design. We applaud the designers for their efforts. We look forward to seeing more. *Deborah Snoonian, P.E.*

CONTINUING EDUCATION

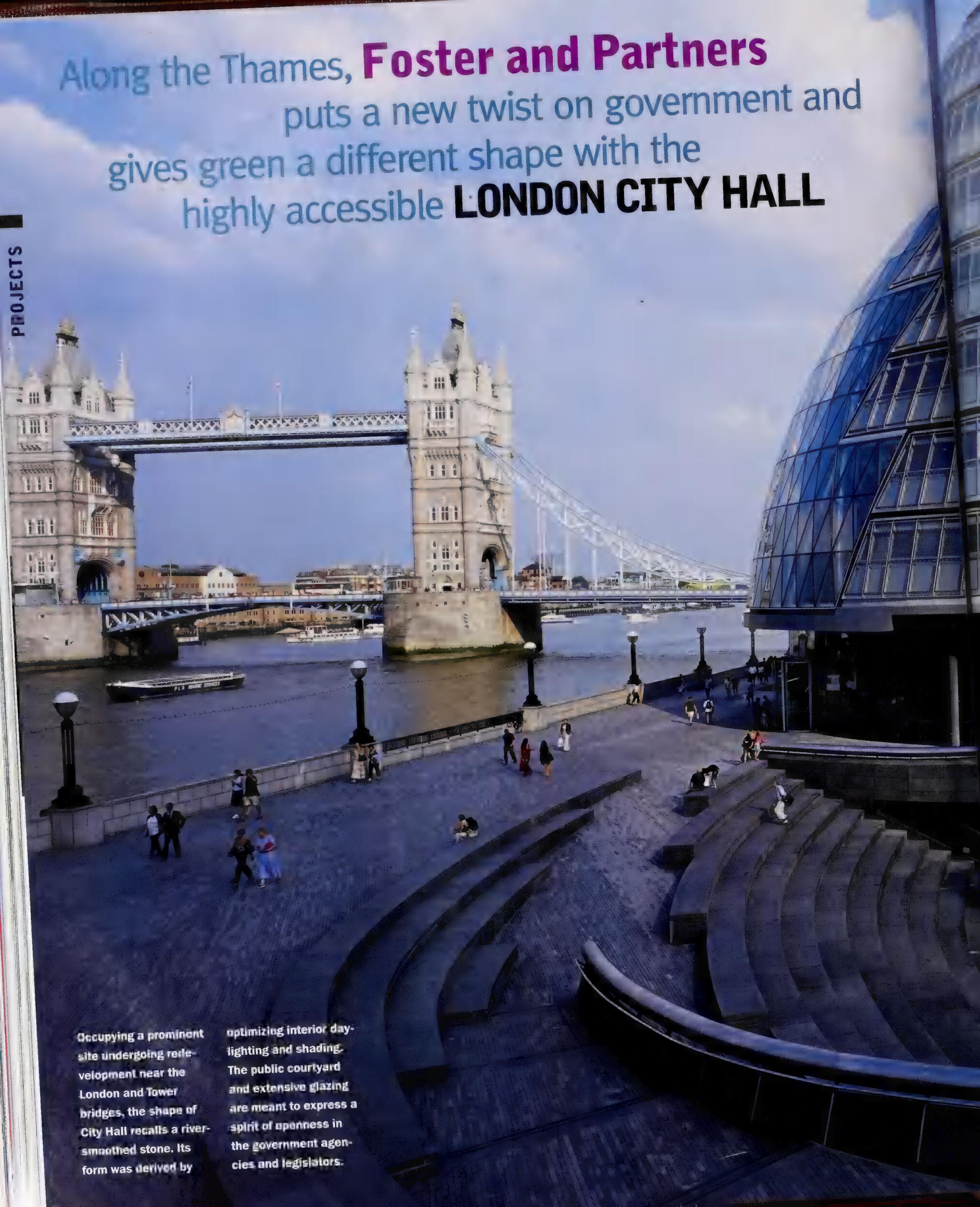
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education Opportunity, which includes three special sections, on pages 116, 128, and 142. To receive credit, turn to page 147 and follow the instructions.

LEARNING OBJECTIVES

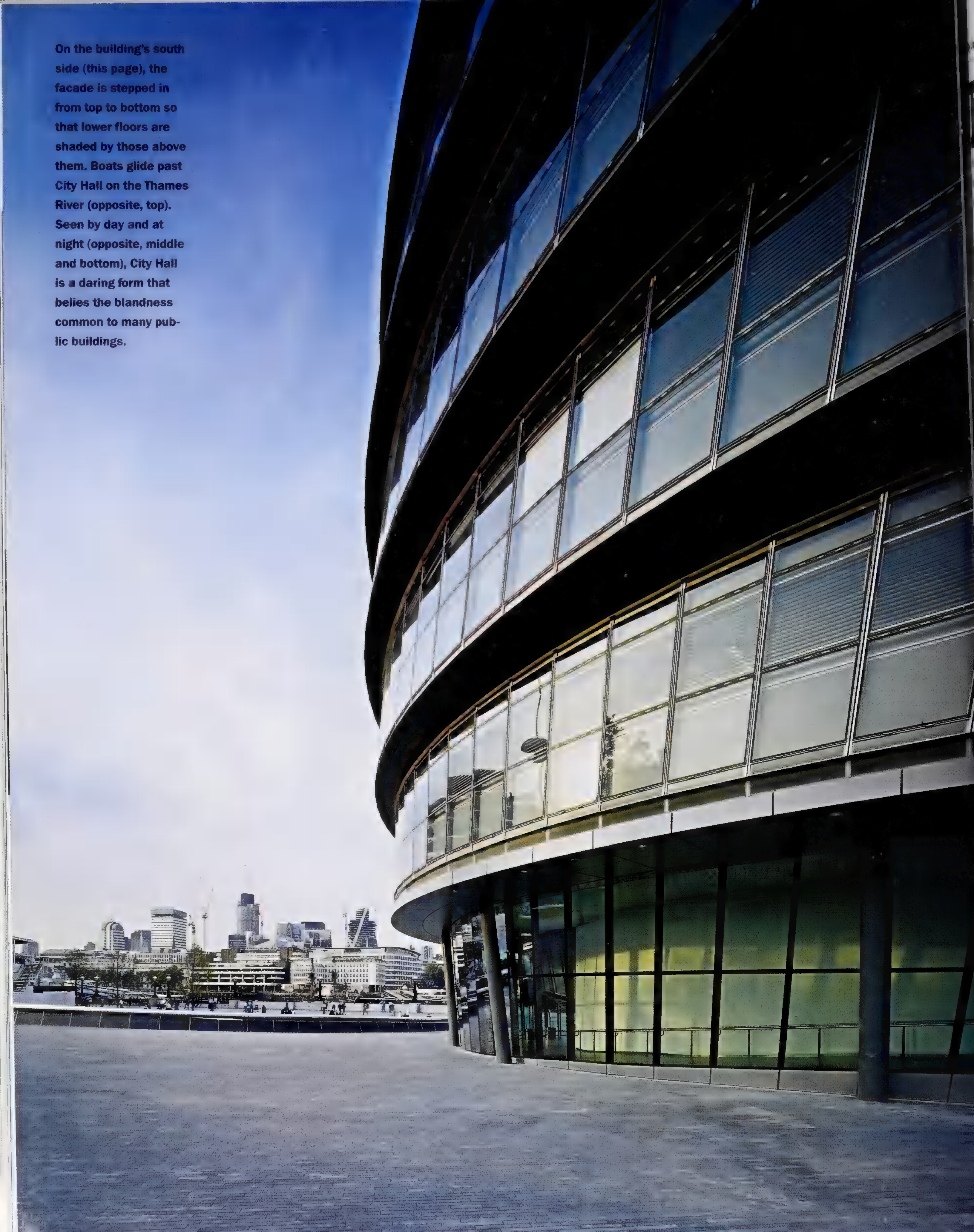
After reading this article, you should be able to:

1. *Describe climate engineering currently being implemented in building projects.*
2. *Explain different ways of cooling and heating buildings in climate engineering.*
3. *Identify factors necessary for environmental comfort.*

Along the Thames, Foster and Partners puts a new twist on government and gives green a different shape with the highly accessible LONDON CITY HALL



Occupying a prominent site undergoing redevelopment near the London and Tower bridges, the shape of City Hall recalls a river-smoothed stone. Its form was derived by optimizing interior daylighting and shading. The public courtyard and extensive glazing are meant to express a spirit of openness in the government agencies and legislators.



On the building's south side (this page), the facade is stepped in from top to bottom so that lower floors are shaded by those above them. Boats glide past City Hall on the Thames River (opposite, top). Seen by day and at night (opposite, middle and bottom), City Hall is a daring form that belies the blandness common to many public buildings.

By Jayne Merkel

If ever a building announced to the world that a new day had dawned, Foster and Partners' new London City Hall does so with a clarity not seen in a city building in this country for quite some time. The big, shiny, steel-and-glass egg looks as if the dome of Berlin's Reichstag (which Foster also designed) had spun off, gathered steam, and landed on the banks of the Thames with such force that its tip was buried in the earth.

On closer examination, the Greater London Authority (GLA), as the building is also known, is even stranger—curved inward toward the top on one side, stepped out and upward on the other, a bit flat-topped from some perspectives, pointed like the back of a cat's ear from others. Its shape was devised to minimize the surface area exposed to direct sunlight while still admitting daylight. The southern overhangs allow each floor to shade the one beneath it but make the structure seem a bit tipsy. Inclined peripheral steel columns, which appear straight on each level but bend inside the floor plates, keep it erect.

On the north side, transparent triangular panels open the Assembly chamber to the river. On the east, west, and south, where the offices are located, the skin is composed of a banded grid of triple-glazed panels with fritting, solar blinds, and operable vents. Offices are cooled by ceiling-mounted chilled beams fed by the water table 427 feet below London; by winter, that water warms up enough to be used for heating. Together, these features reduce the energy load of the building by 75 percent, compared to similar-size office buildings elsewhere in London.

The obviously high-tech building symbolizes a new progressive agenda, and energy savings are an important part of that, though that isn't immediately apparent: There are no natural materials, stony thermal masses, secondary outer shells, or other staple features of sustainable design. What is obvious is that the glass skin, like that of Berlin's Reichstag dome, allows government to be quite literally transparent—visible to the citizenry. Most of the skin on the GLA is actually opaque, but that isn't noticeable since the solid insulated silver aluminum panels that cover three-fourths of its surface are sheathed by plates of shiny glass. The openness is real, though. The citizenry, and even tourists, are welcome. They can walk right in with the governors from a spacious plaza beside the Thames through revolving doors that fold back to accommodate crowds.

Once inside, they find a generous circular atrium with a gigantic model of the city to explore. A gently stepped ramp, similar to the one that surrounds the inside of the Reichstag dome (which is the size of this entire building) but more functional, encircles the structure, providing views into the Assembly chamber on one side and government offices on the other. You can really see government at work, at close range. On the north are vistas of the City, London and Tower bridges, and the Tower of London, looking like icons of a different millennium, which they are.

(continued on page 120)

Jayne Merkel, a contributing editor of the London-based magazine Architectural Design/AD, *is a former editor of the New York AIA's* Oculus. *She is writing a book about Eero Saarinen for Phaidon Press.*

Project: *City Hall, London, England*
Client: *CIT Group*
Architect: *Foster and Partners; Lord Norman Foster, FAIA, Ken Shuttleworth, Andy Bow, Stefan Behling, Sean Affleck, Richard Hyams*
Engineers: *Arup (structural, m/e/p, facade, fire, acoustics)*
Consultants: *Davis Langdon & Everest (cost); Claude R. Engle Lighting (lighting); Reef UK (maintenance); Townshend Landscape Architects (landscape)*
Contractors: *Mace (construction manager); Schmidlin UK (cladding); Westcol Glosford (structural steel)*

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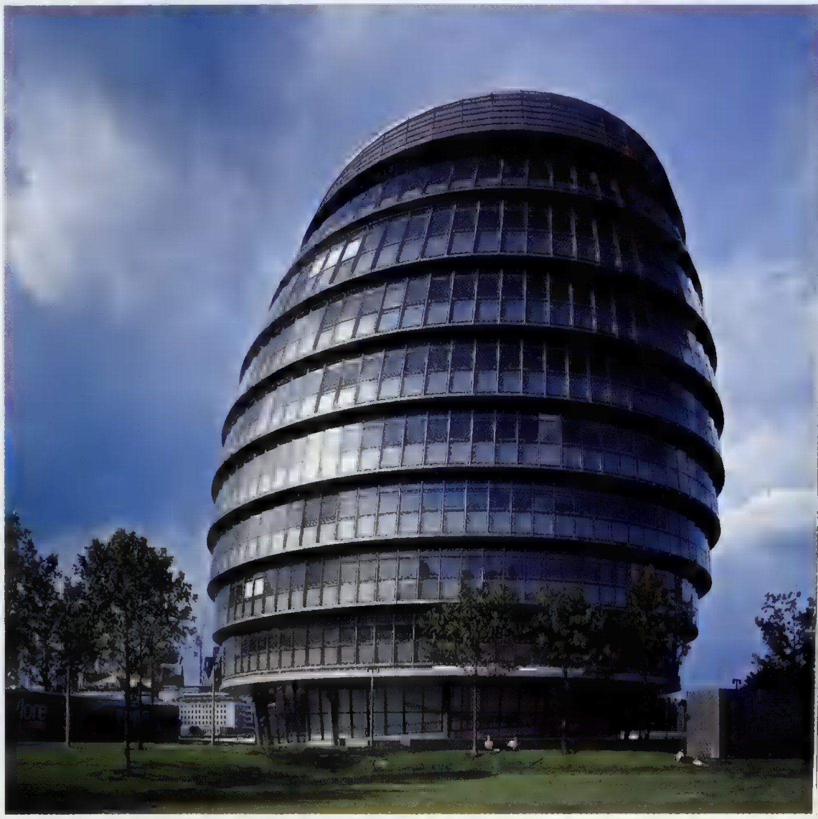
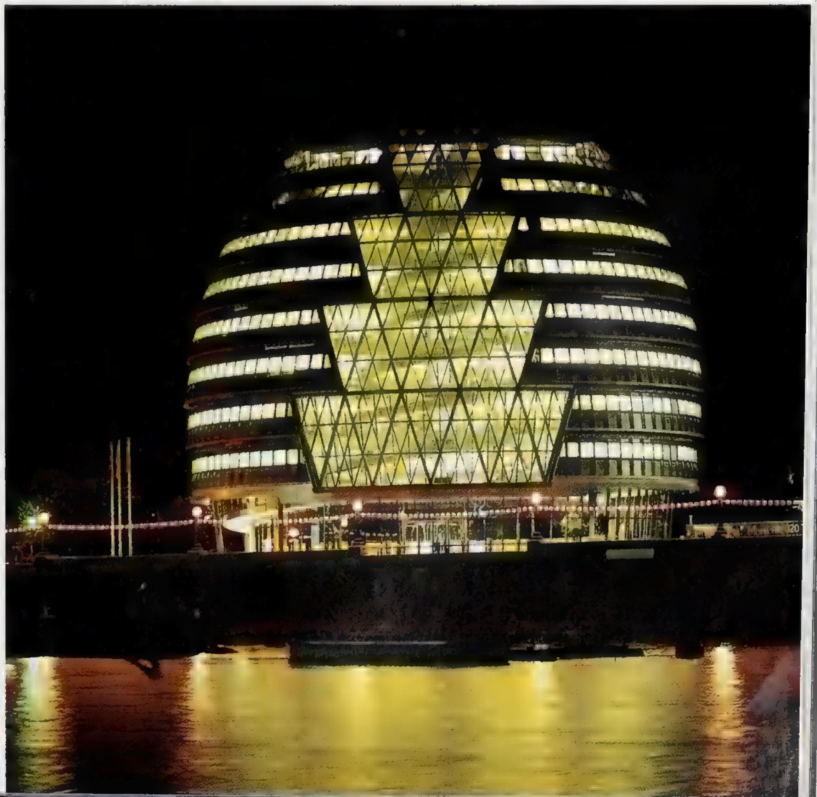
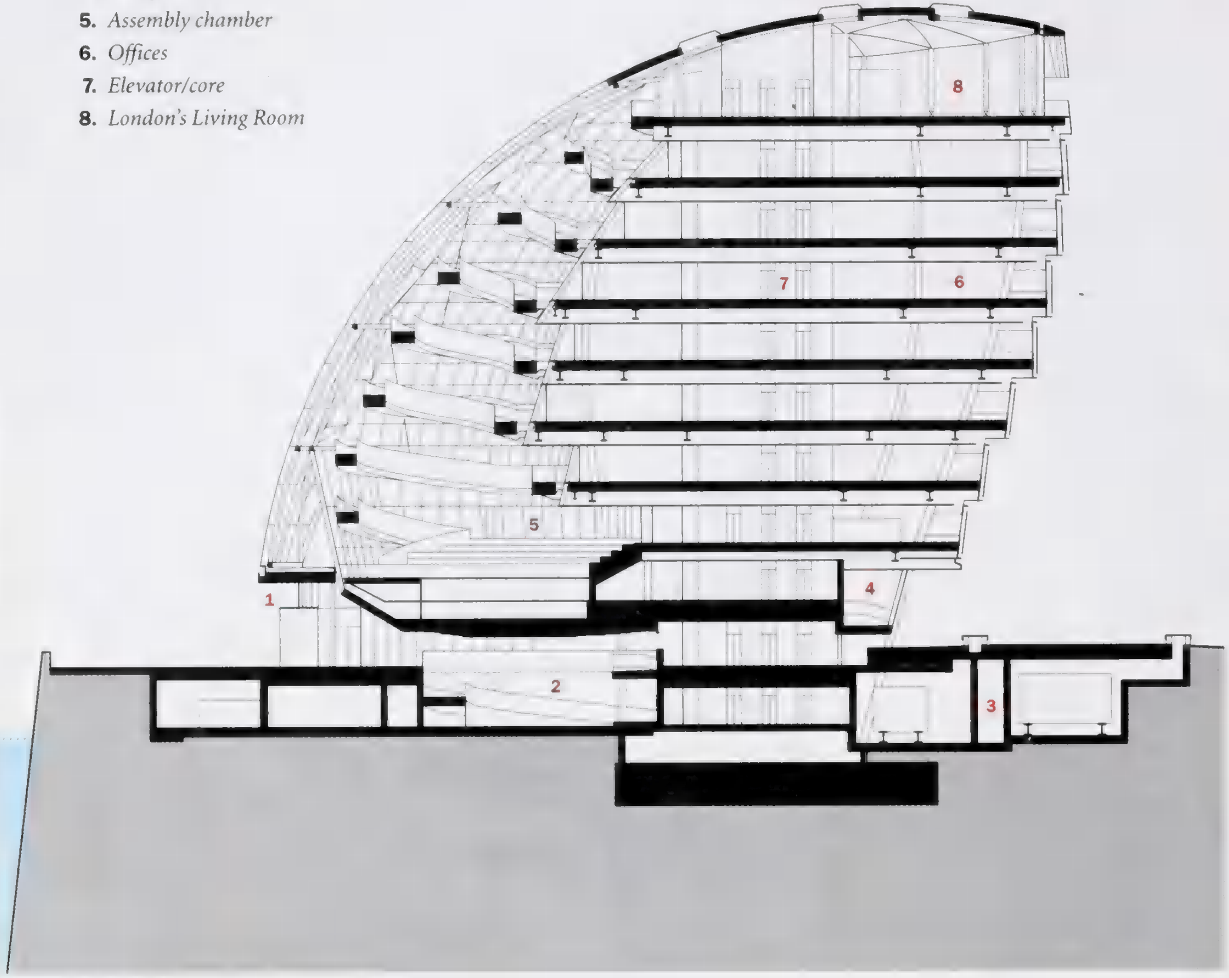


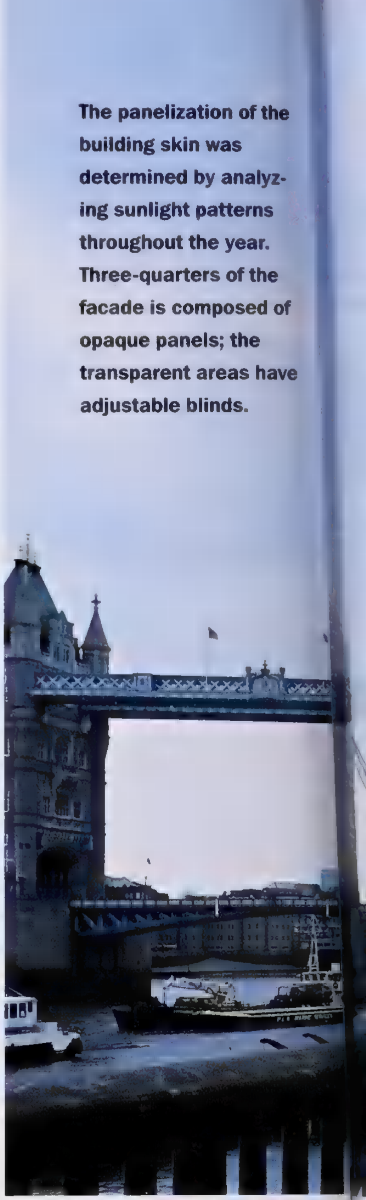


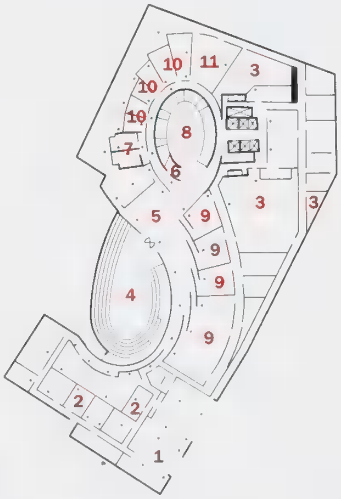
1. *Main entrance*
2. *Exhibition space*
3. *Physical plant*
4. *Ramp*
5. *Assembly chamber*
6. *Offices*
7. *Elevator/core*
8. *London's Living Room*



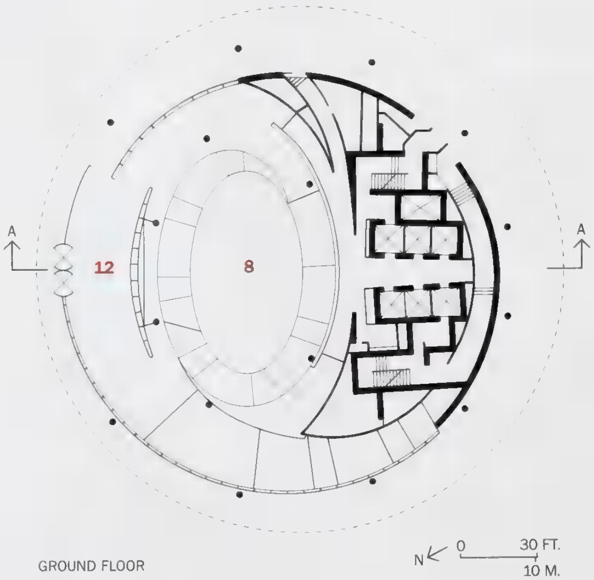
SECTION A-A

The panelization of the building skin was determined by analyzing sunlight patterns throughout the year. Three-quarters of the facade is composed of opaque panels; the transparent areas have adjustable blinds.

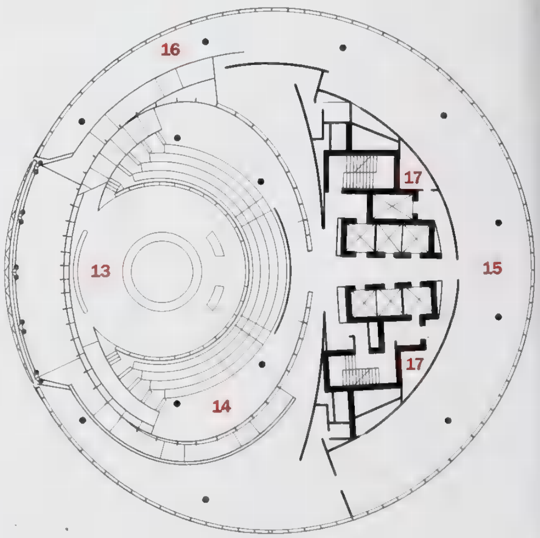




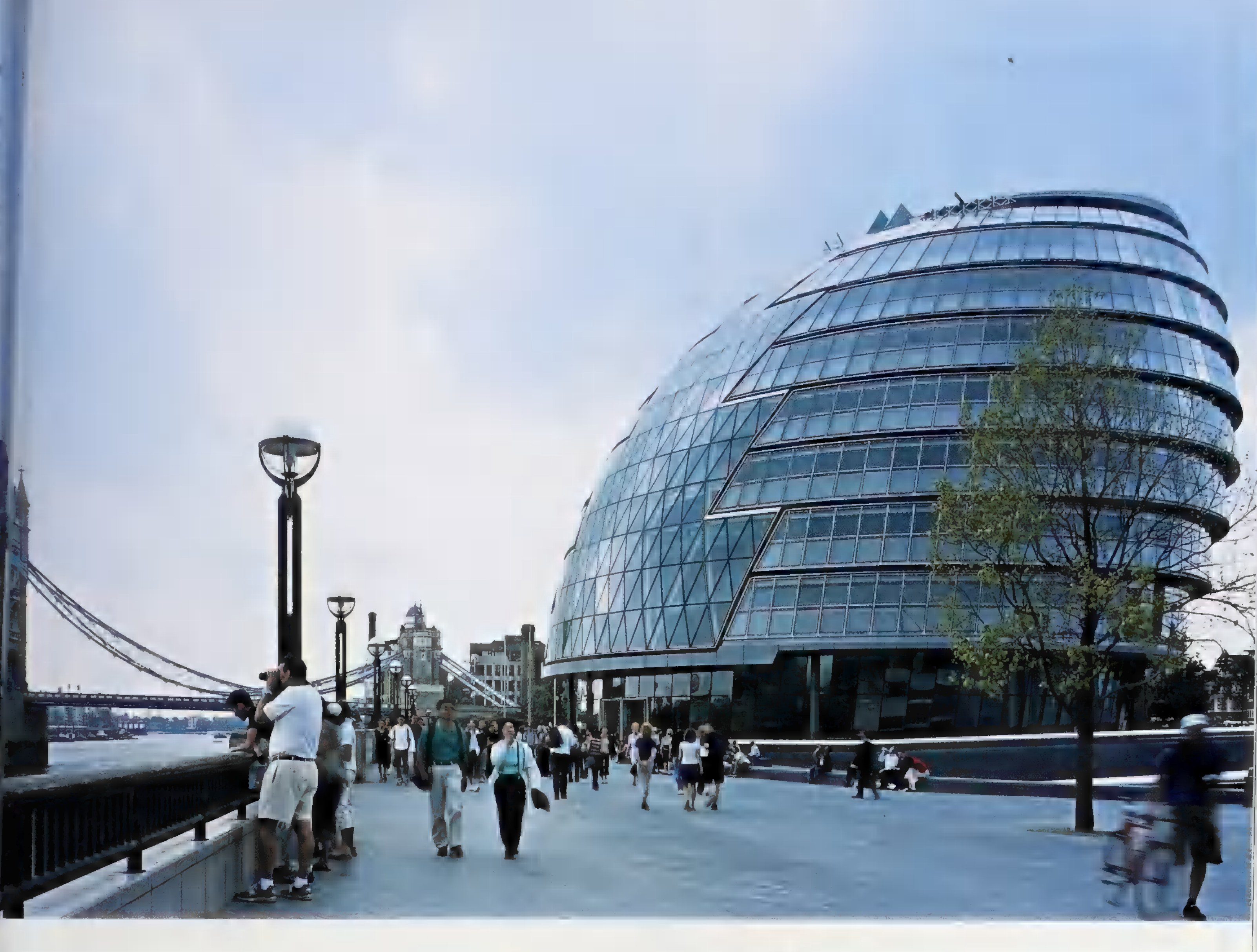
UNDERGROUND

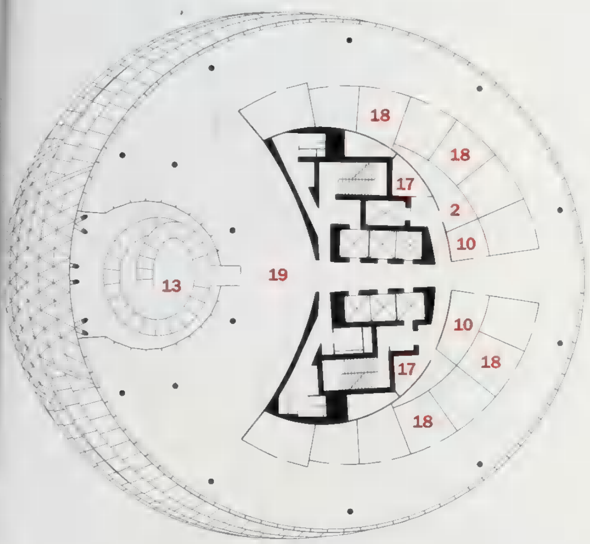


GROUND FLOOR

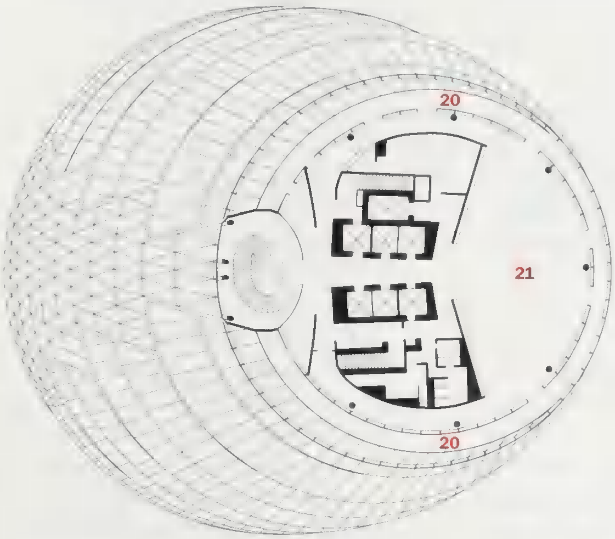


LEVEL TWO





LEVEL SIX



LEVEL NINE

1. *Parking*
2. *Storage rooms*
3. *Physical plant*
4. *Outdoor amphitheater*
5. *Café*
6. *Information desk*
7. *Kitchen*
8. *Exhibition area*
9. *Committee room*
10. *Meeting room*
11. *Media center*
12. *Reception*
13. *Assembly chamber*
14. *Public viewing gallery*
15. *Library*
16. *Reading room*
17. *IT room*
18. *Office*
19. *Open-plan area*
20. *Terrace*
21. *London's Living Room*

Technology and ingenuity contribute to energy-efficient performance

The strangely beautiful egg shape of the Greater London Authority (GLA) by Foster and Partners has as much to do with sustainability as it does with architectural design. The architect and its engineering partner, Arup, decided early on that the building would be designed as an energy-efficient entity, as opposed to a typical structure that has energy-efficient devices tacked onto it late in the design-development phase. This meant that the envelope itself had to limit heating and cooling loads. The result is a spherical envelope that is itself an energy-saving device. A sphere has 25 percent less surface area than a cube of the same volume. Less surface equals less heat and cooling gains.

Arup engineered every aspect of the facade to minimize heat transfer across the external surfaces. The maximum allowable solar heat gain for each external square meter of building was determined by constructing and analyzing heating- and cooling-load models. The use of highly insulated panels combined with high-performance glazing reduces potential heat loss from the building. The greater the need for solar shading, the greater the cladding-to-glazing ratio. The use of these panels combined with high-performance glazing reduces potential heat loss from the building to a level well below that required by the building regulations.

Structure played a major role in creating an efficient and integrated network of systems. A diagrid structure supports the north-facing facade. Hot water courses through horizontal members, 12 inches in diameter, warming the atrium and creating, in essence, London's largest radiator. Structure that doubles as plumbing illustrates the economy of systems integration.

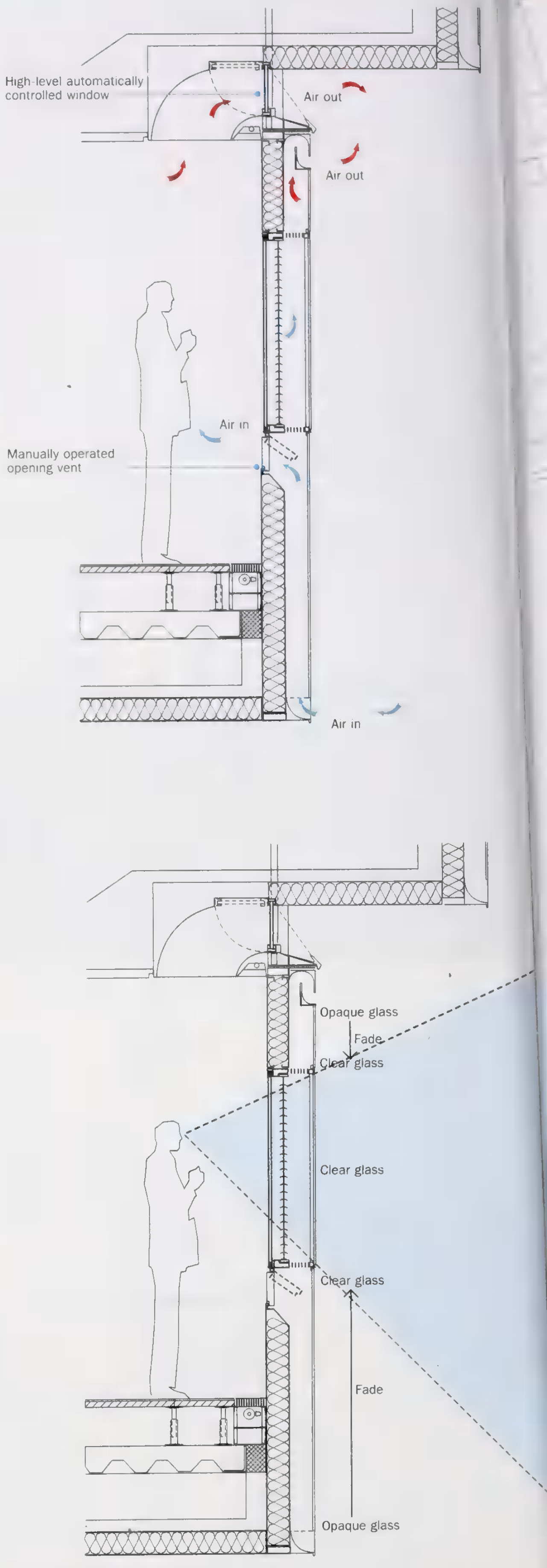
Furthermore, the building leans back toward the south, where floor plates are stepped inward from top to bottom, providing natural shading from the most intense direct sunlight. On the north side, where there is no direct sunlight, the glazing is clear.

When heating is required, two gas-fired boilers generate hot water for use in convector heaters in the offices, in the debating chamber, and for the underfloor heating of the foyer. The hot water runs through heating coils in the air-handling units, warming incoming air. To reduce the energy required to circulate the water around the system, Arup chose variable speed pumps, which allow the water flow to be increased or reduced to meet demand.

Air for ventilation enters offices through grilles in the floor. Vents in the facade are provided in the external offices for natural ventilation. When the vents are opened, local cooling and heating systems will be deactivated. During winter, heat and moisture will be recovered from the outgoing air and used to condition incoming ventilation air using devices called hygroscopic (the property of readily absorbing water) thermal wheels.

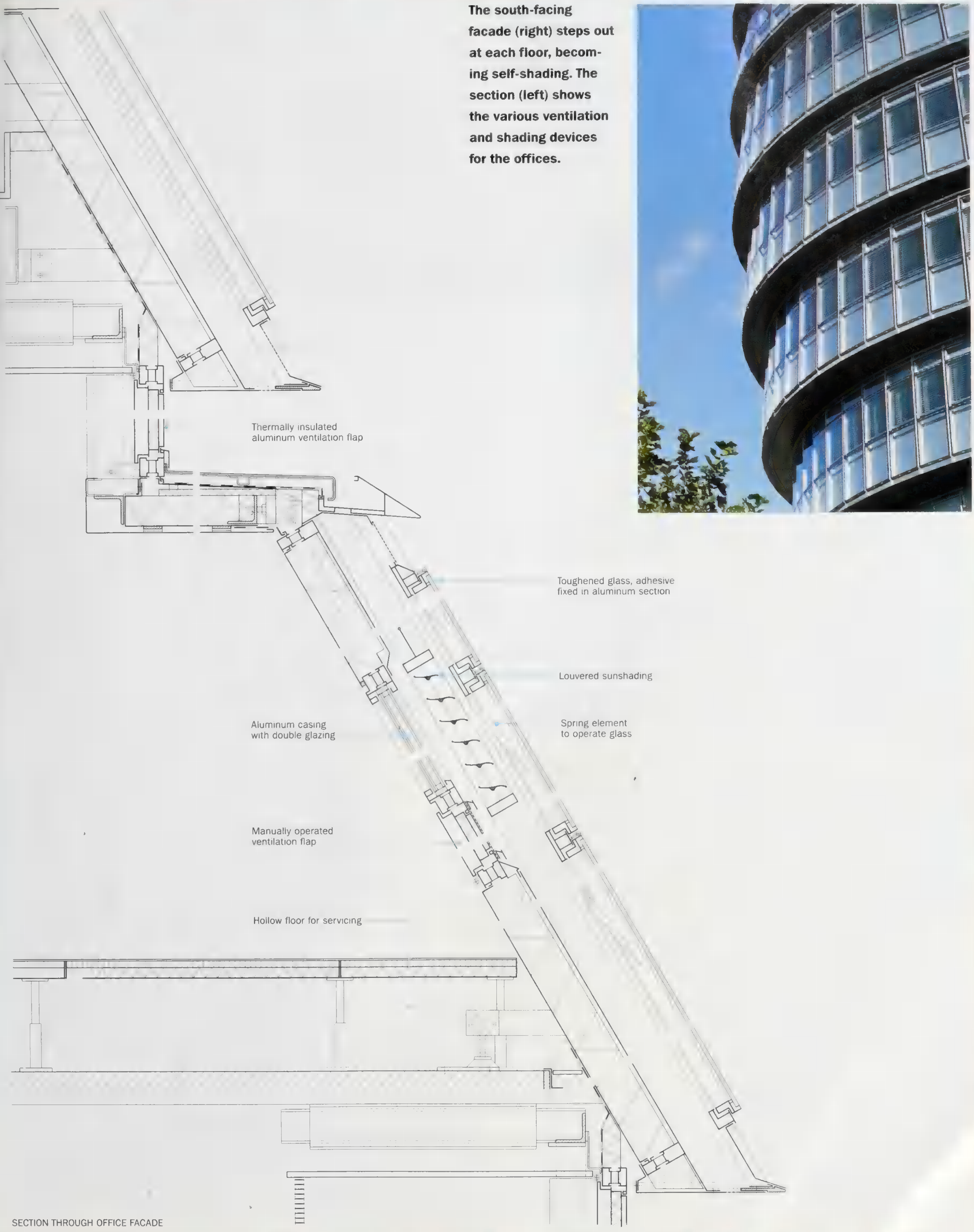
In the summer, comfortable internal temperatures are maintained by chilled beams, rather than electric chillers. The beams are located in the office ceilings, where cold ground water passes through the heat exchanger and is circulated through these beams. The ground water is pumped to a height of 410 feet at a temperature of 53 to 57 degrees Fahrenheit from the aquifer below the building via two specially drilled boreholes. This cold ground water is also used directly in the cooling coils of the air-handling units to cool the fresh air entering the building.

The use of this natural resource for cooling reduces electricity consumption and thus saves money. Boreholes use



NATURAL VENTILATION DIAGRAMS

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION *This month's Continuing Education Opportunity includes three special building-science sections, on pages 116, 128, and 142. For learning objectives to focus your study while reading these sections, turn to the Projects introduction on page 109. To receive credit, turn to page 147 and follow the instructions. As always, archrecord.com has this story and more continuing education.*


Thermally insulated aluminum ventilation flap
Toughened glass, adhesive fixed in aluminum section
Louvered sunshading
Aluminum casing with double glazing
Spring element to operate glass
Manually operated ventilation flap
Hollow floor for servicing

The south-facing facade (right) steps out at each floor, becoming self-shading. The section (left) shows the various ventilation and shading devices for the offices.

SECTION THROUGH OFFICE FACADE

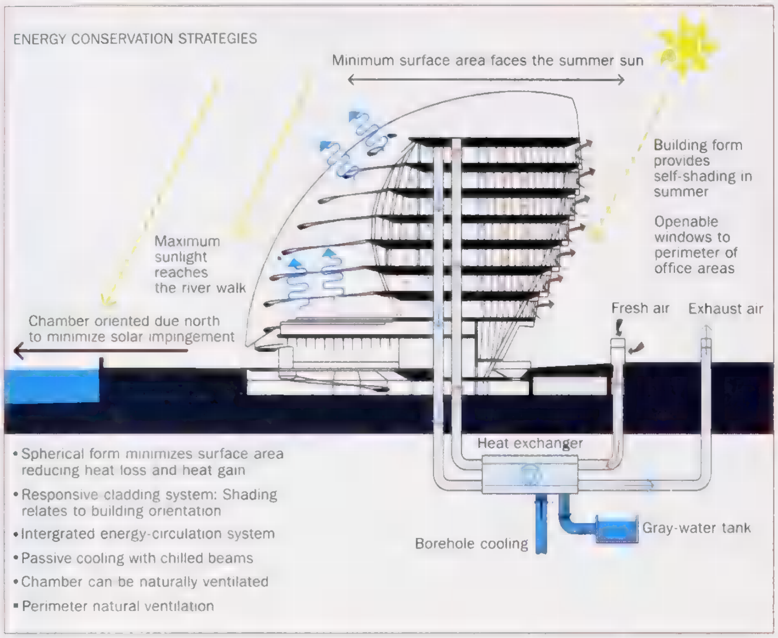
less energy than do conventional chillers and cooling towers, and they are less expensive to install and maintain. Following circulation, the ground (aquifer) water is used to flush toilets before being discharged, further reducing water consumption.

As shown, environmental comfort is determined by air movement, ambient temperature, humidity, air intake and exhaust, and solar radiation. Building systems can be optimized only if the designers understand the interaction and interdependence of each system with every other system. Arup specializes in what is called flow engineering, which is the process of analyzing, predicting, and controlling the movement of fluids using mathematical models and experimental techniques.

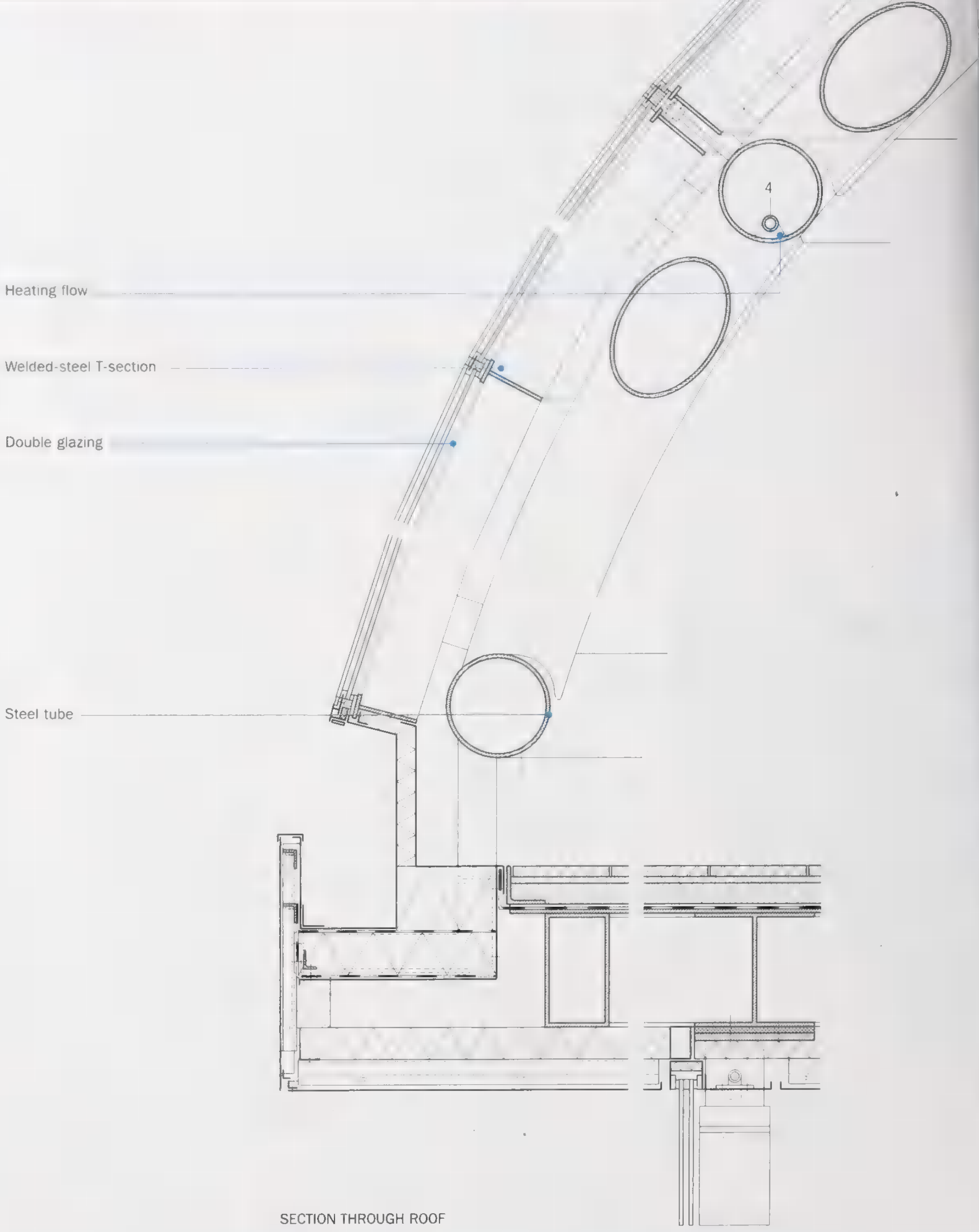
As building owners are realizing, systems are only as good as their consistent performance. Surveys have indicated that 75 percent of buildings in the United Kingdom are operating incorrectly, have inappropriate operation and maintenance contracts, or are wasting money through inefficient energy usage. Arup engineered a sophisticated Building Management System (BMS) to maintain and control conditions within the GLA building. The BMS is programmed to maximize the use of the energy-saving systems and ensure other mechanical systems are used efficiently. For example, the chamber and committee rooms of the GLA building will only be cooled when they are occupied. During peak summer conditions and when the chamber is not in use, large air vents allow natural ventilation. The BMS also controls the flow and temperature of the air entering the chamber and ensures the occupants are provided with the required amount of fresh air.

Arup's environmental expertise continues to be applied beyond the GLA envelope. The firm has worked closely with the mayor of London, Ken Livingstone, and the GLA over the past two years to develop a comprehensive set of policies and proposals that will improve London's air quality. These range from encouraging environmental best practice from businesses and new developments to investigating the feasibility of a low-emissions zone (an area from which the most polluting vehicles are excluded). *Sara Hart*

ENERGY CONSERVATION STRATEGIES

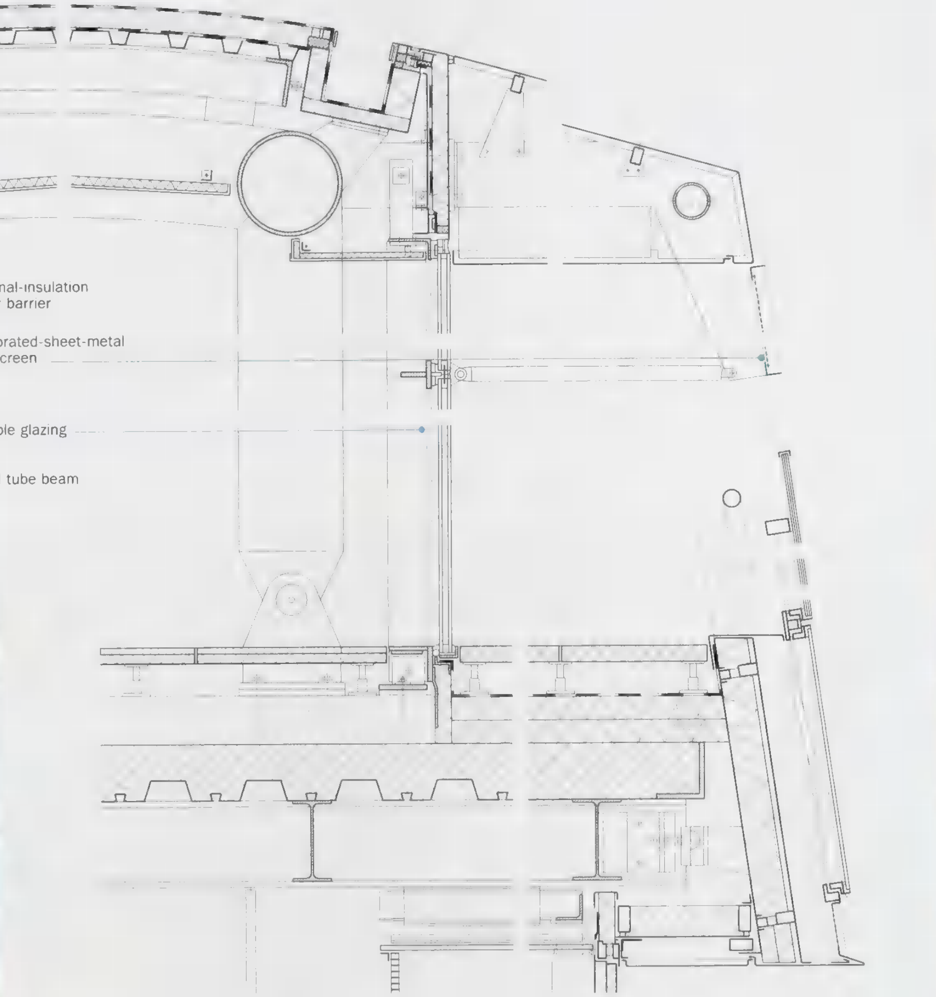

Minimum surface area faces the summer sun
Building form provides self-shading in summer
Openable windows to perimeter of office areas
Maximum sunlight reaches the river walk
Chamber oriented due north to minimize solar impingement
Fresh air
Exhaust air
Heat exchanger
Borehole cooling
Gray-water tank

- Spherical form minimizes surface area reducing heat loss and heat gain
- Responsive cladding system: Shading relates to building orientation
- Intergrated energy-circulation system
- Passive cooling with chilled beams
- Chamber can be naturally ventilated
- Perimeter natural ventilation



SECTION THROUGH ROOF

PHOTOGRAPHY: © NIGEL YOUNG/FOSTER AND PARTNERS (OPPOSITE)


Thermal-insulation vapor barrier
Perforated-sheet-metal sunscreen
Double glazing
Steel tube beam
Aluminum sunshade

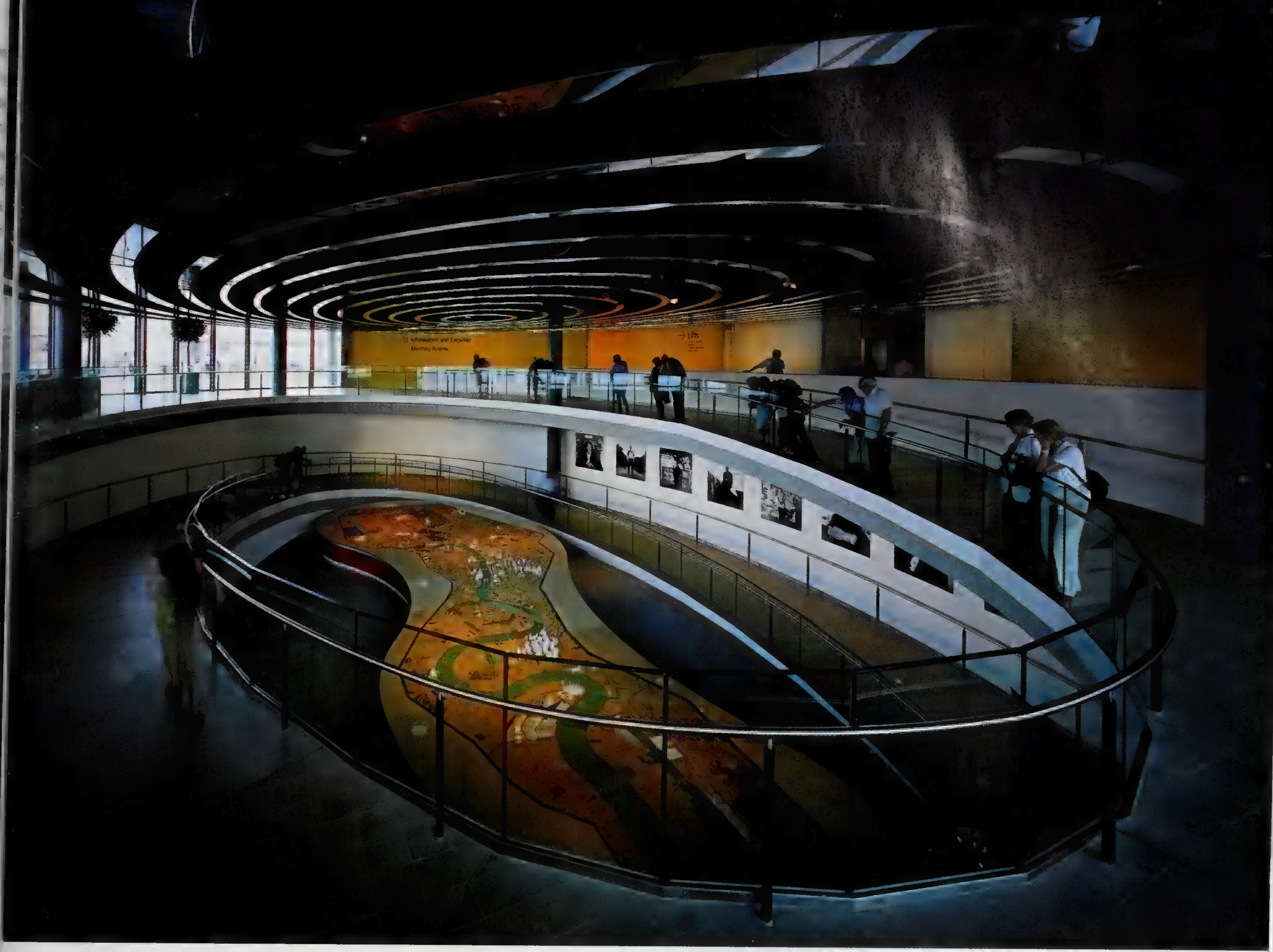
(continued from page 113) The 201,650-square-foot building was constructed for £43 million (about $64 million). It replaces the Greater London Council's enormous County Hall, designed by Ralph Knott and erected in 1922 at the public's expense. When the Thatcherites dissolved the leftist Council in 1986, they also sold County Hall; this stone structure with a proud classical facade now houses a hotel, apartments, galleries, and an aquarium.

When Tony Blair came to power, he said his government represented a return to "modernism," implying a commitment to a social safety net and a forward-looking approach. So he had to create a place for the reborn agencies to operate, and that place had to be a visible symbol of compassionate, enlightened leadership. Since privatization was (and is) still in vogue, the government could not simply build the new facility—instead, it held a developer/architect competition that allowed entrants to propose both the building's form and location. Extraordinary energy savings were also required. The winners were CIT Group developers, with Foster and Partners architects and Arup engineers.

The team chose a 3.6-acre site on the South Bank that had been cleared in the 1980s for what was then called London Bridge City 2 within the Southwark Riverside Masterplan. This area has become vastly more desirable since the Tate Modern and a huge Ferris wheel (known to Londoners as "The Wheel" but officially named The British Airways London Eye, designed by David Marks & Julia Banfield Architects) opened a few years ago. It was ripe for development and accessible by two tube stops. The new team renamed the site More London and planned nine buildings containing a total of 2.4 million square feet, all to be designed by Foster. It's the biggest commercial development in London in 15 years. Besides City Hall, there will be four office headquarters buildings with shops and restaurants on the ground floors, underground parking, a hotel, a theater, and two major public squares in a privately owned (but ungated) area with walkways and a 1,000-seat amphitheater.

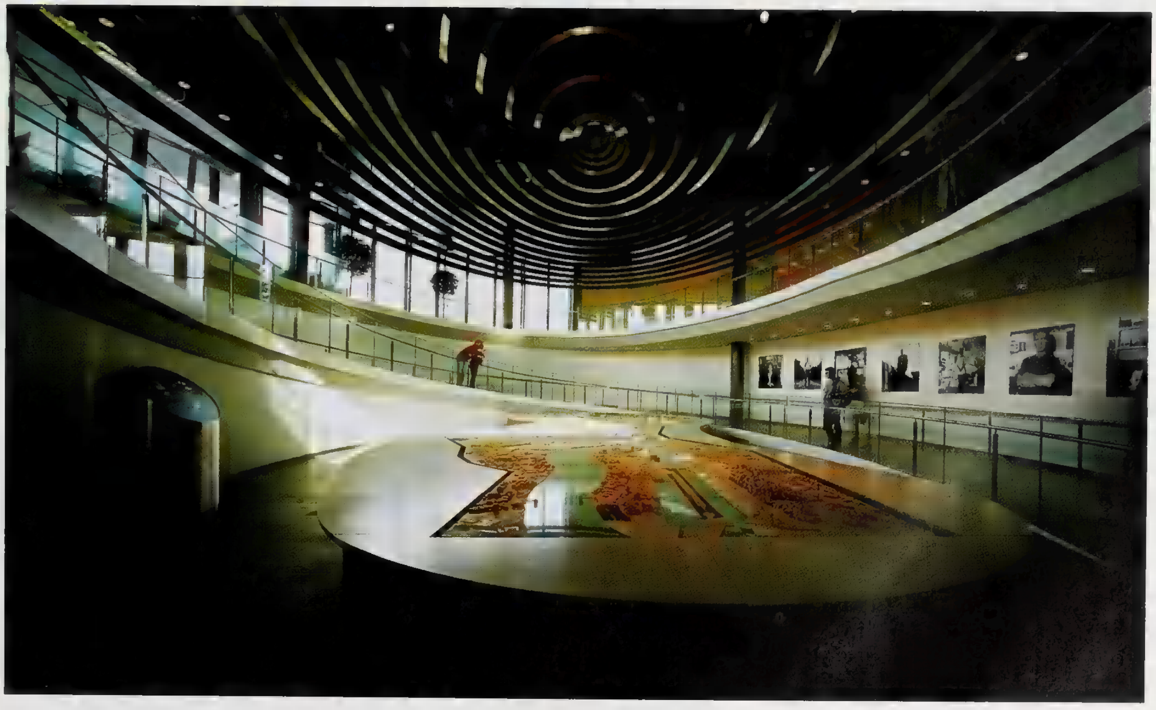
Old buildings on a once-shabby adjacent street are being renovated for mixed uses and will be connected with City Hall and its new neighbors, to tie their site to the city grid and London's past. But City Hall itself speaks to the future in a way American municipal buildings rarely do—or haven't since Frank Lloyd Wright's futuristic Marin County Civic Center appeared in northern California in 1962.

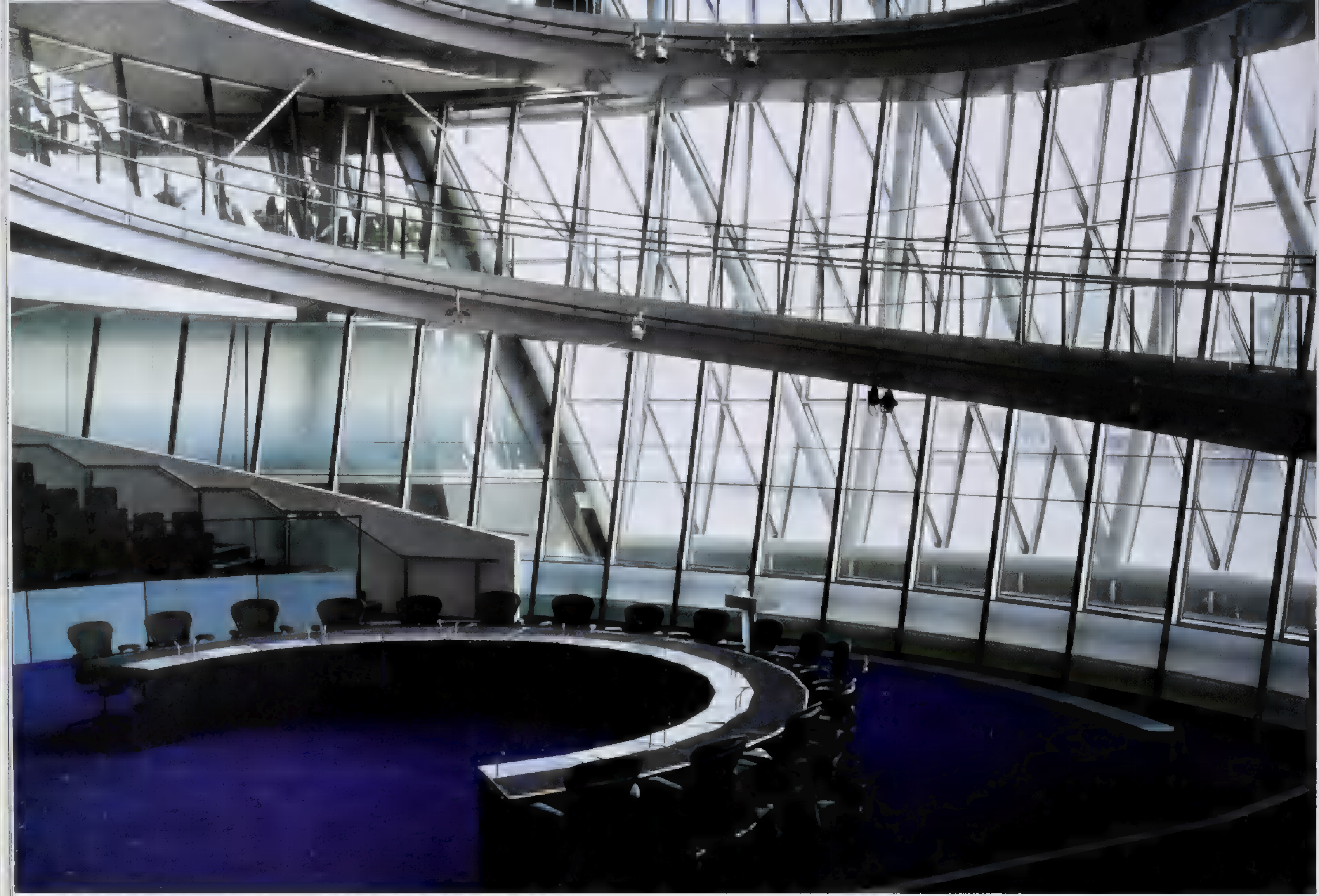
In London, what you see now is lightness—glass and steel working



Entry doors fold back to reveal a naturally lit interior (opposite). Visitors and legislators can peruse an enormous model of London in the atrium (this page, top and bottom) before ascending a ramp for a closer look at the Assembly chamber and government offices.

PHOTOGRAPHY: © NIGEL YOUNG





together dynamically to create a structure that, though unfamiliar and daring, invites exploration and enables interaction. At the top is a space with a terrace overlooking the city, called "London's Living Room," which can be used by the public for exhibitions and events. The cafeteria under the atrium is also open to the public. And the lavender-carpeted Assembly chamber on the second level is surrounded by a tiered public gallery. This space has such fine acoustics that speakers don't need microphones; even softly spoken conversation is audible on the upper levels of the ramp. The 25 members of the Assembly can sink into ergonomic chairs at their gray suede round table and tap on their individual stainless-steel desktops, at which point a flat-screen computer will appear. James Bond, eat your heart out—as the members of the London AIA did when they settled into the seats while on a tour last fall led by Bruce Curtain of Foster and Partners. The architects were so fascinated by City Hall it was difficult to get them to leave at the end. Night fell during the tour, so the building glowed handsomely as a finale.

Whether City Hall will be quite as sensational when the area around it is redeveloped remains to be seen. But, for now, it puts government in a favorable and forward-looking light. ■

Sources

Glazing: *Schmidlin (external); Seele (atrium and other areas)*

Steel: *Wescol Glosford (custom frame)*

Concrete work: *Geoffrey Osborne*

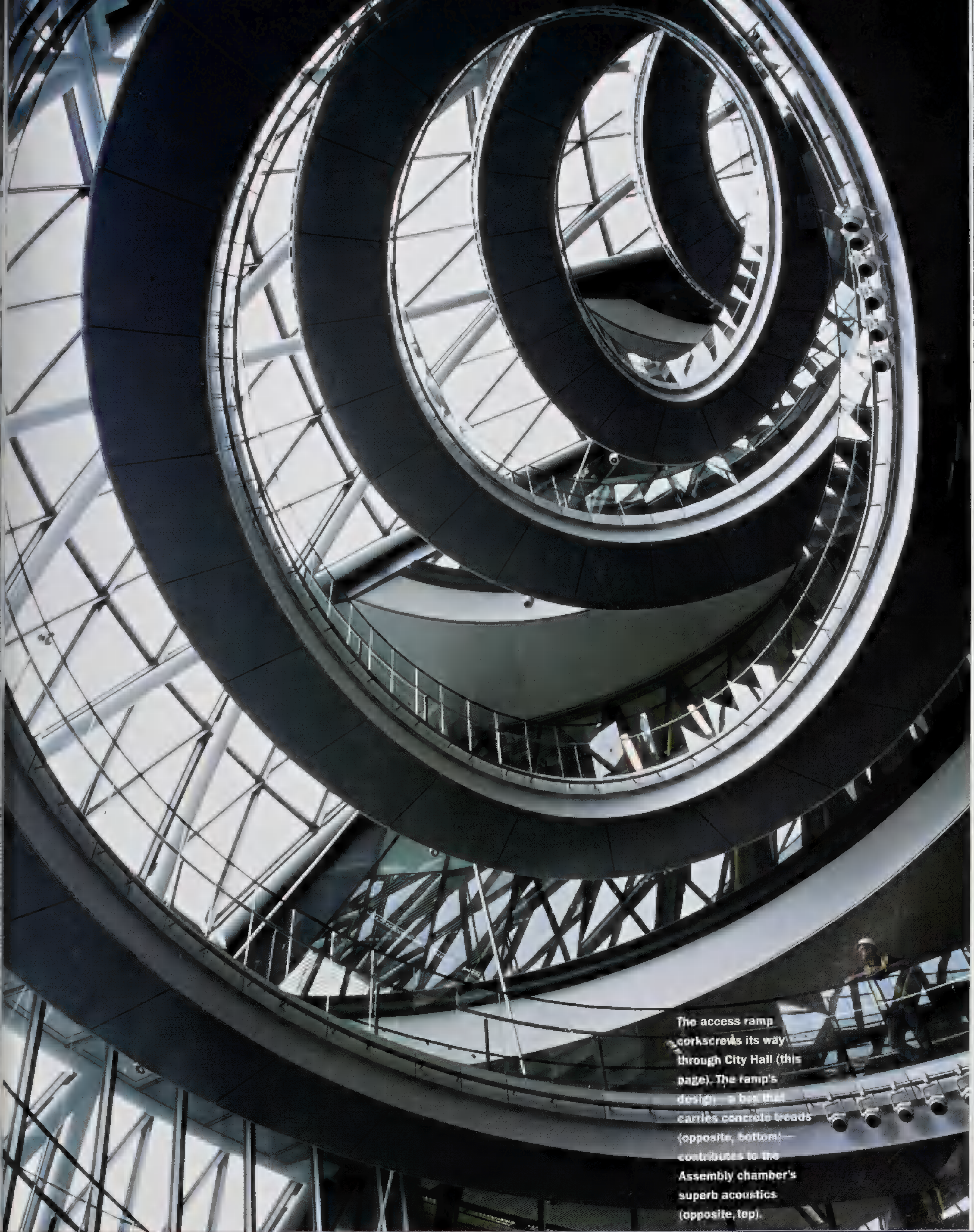
Ramp: *Waagner Biro Atkiengesellschaft*

Revolving doors: *Rush Entrances/Blasi*

Chilled beams: *Trox Technik*

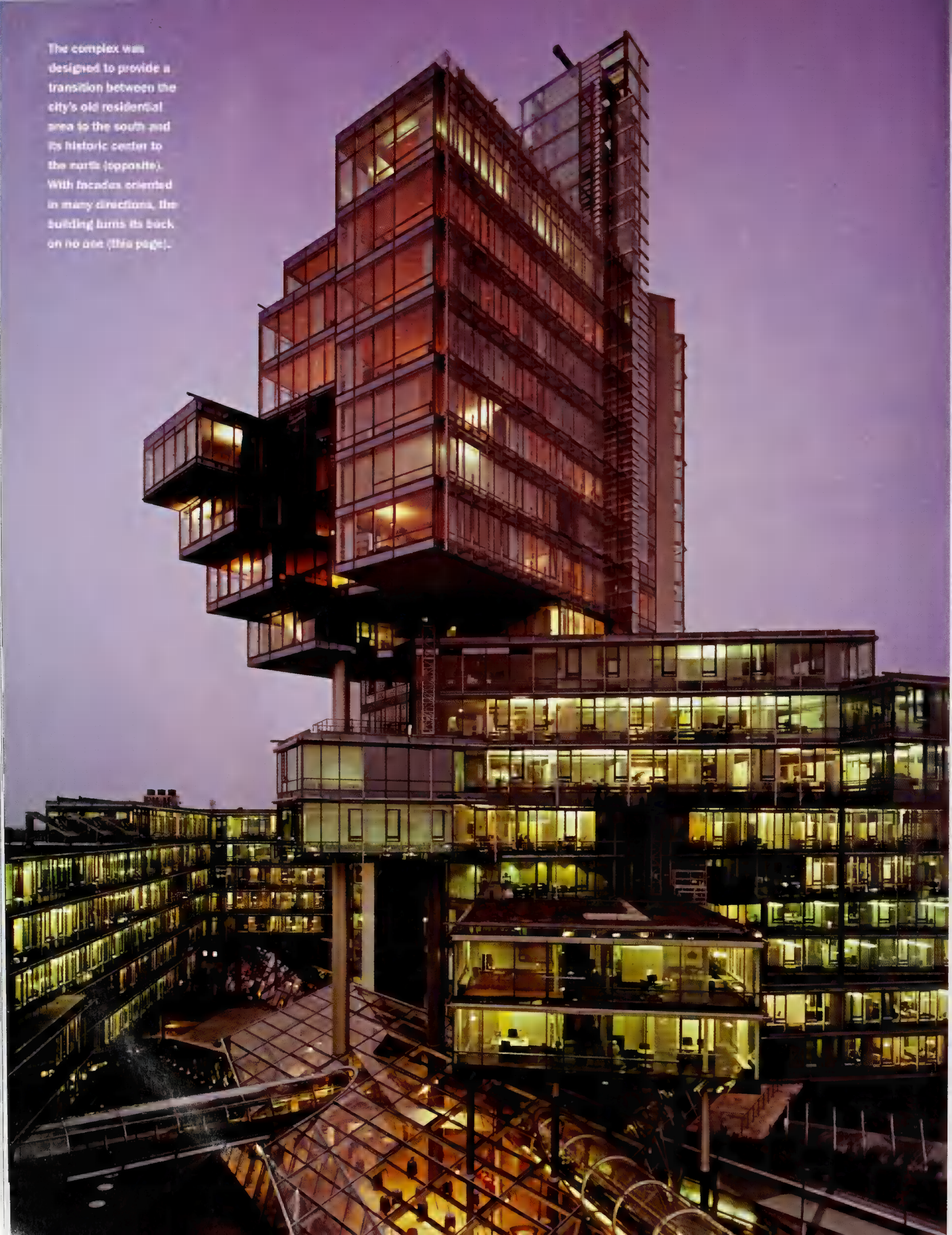
WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

PHOTOGRAPHY: © NIGEL YOUNG/FOSTER AND PARTNERS



The access ramp corkscrews its way through City Hall (this page). The ramp's design—a box that carries concrete treads (opposite, bottom)—contributes to the Assembly chamber's superb acoustics (opposite, top).

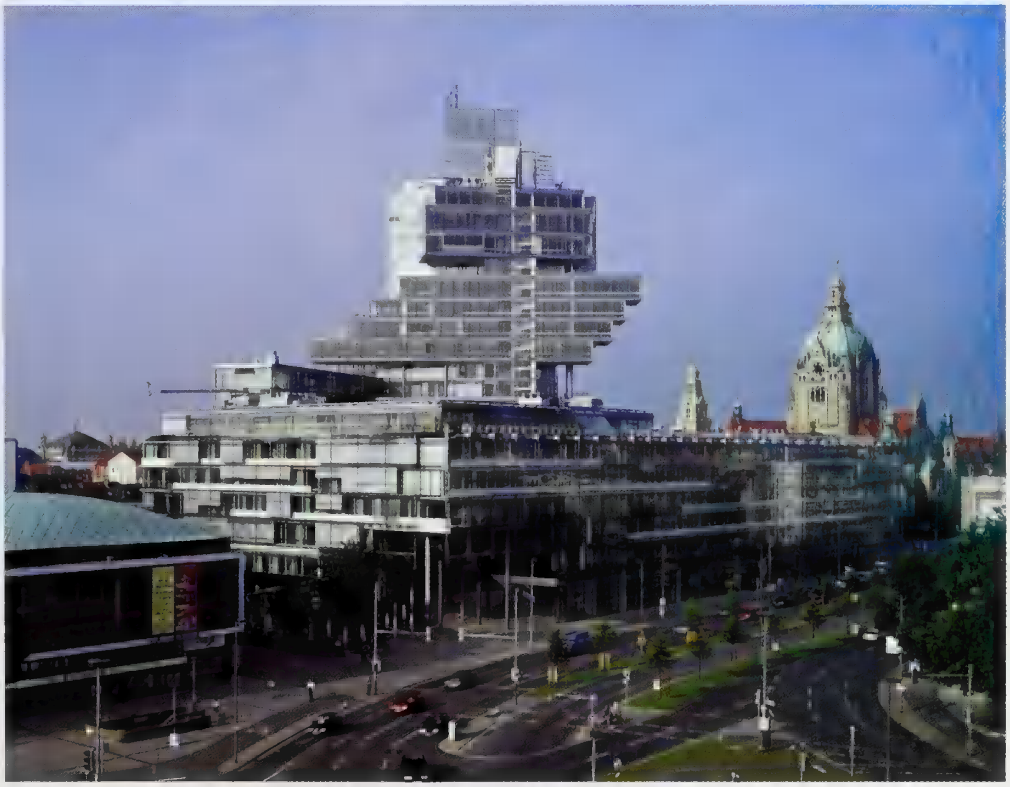
The complex was designed to provide a transition between the city's old residential area to the south and its historic center to the north (opposite). With facades oriented in many directions, the building turns its back on no one (this page).



PHOTOGRAPHY: © ROLAND HALBE

Behnisch, Behnisch & Partner creates a glimmering, dynamic, and energy-efficient landscape in glass and steel at NORDDEUTSCHE LANDESBANK

By Tracy Metz



Without the glazing, which takes on the blue cast of the sky, it would be tempting to view the Norddeutsche Landesbank in Hannover, Germany, as a modern-day Emerald City. This new bank complex by Behnisch, Behnisch & Partner is a self-contained mini-metropolis, rising like a sculpture of glass-and-steel boxes, piled with nonchalant elegance one atop the other, some cantilevered daringly, and all culminating in a tower.

Hannover is not a city with a well-established tradition of risk-taking architecture. Close to the old East German border, it lagged behind the rest of West Germany in both economics and post–World War II reconstruction. The locals have grown fond of the remaining old buildings, and years of restrictive zoning resulted in a rather low and uniform cityscape. Even the impact of cutting-edge architecture in the pavilions of Hannover's Expo 2000 [RECORD, July 2000, page 30] is not obvious.

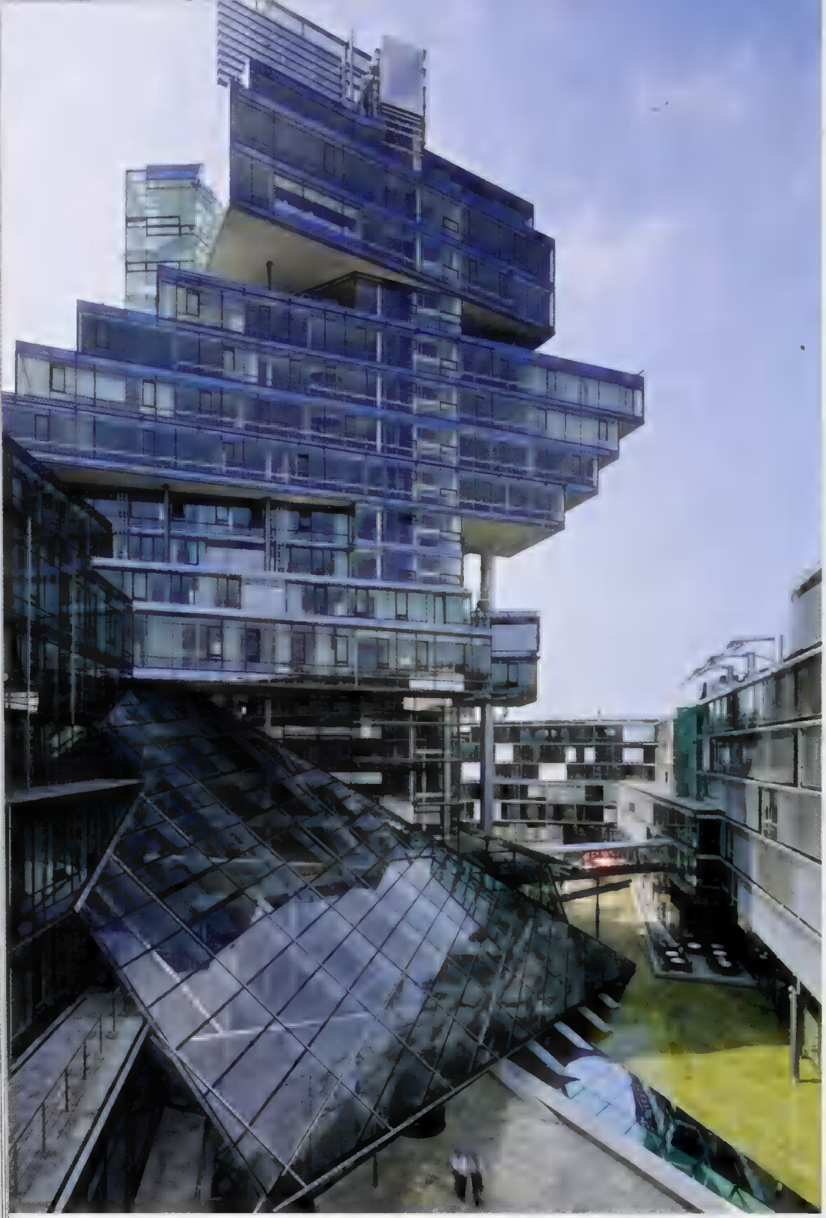
Within this cultural and physical milieu, Behnisch, Behnisch & Partner devised a massing that would create a transition zone between Hannover's 19th-century residential area to the south and its denser historic center to the north. With shimmering elevations facing many different directions, the structure's multiple orientations were intended as a way of connecting it with the surroundings, so that the Norddeutsche Landesbank (Nord/LB) building wouldn't seem to be turning its back on anyone.

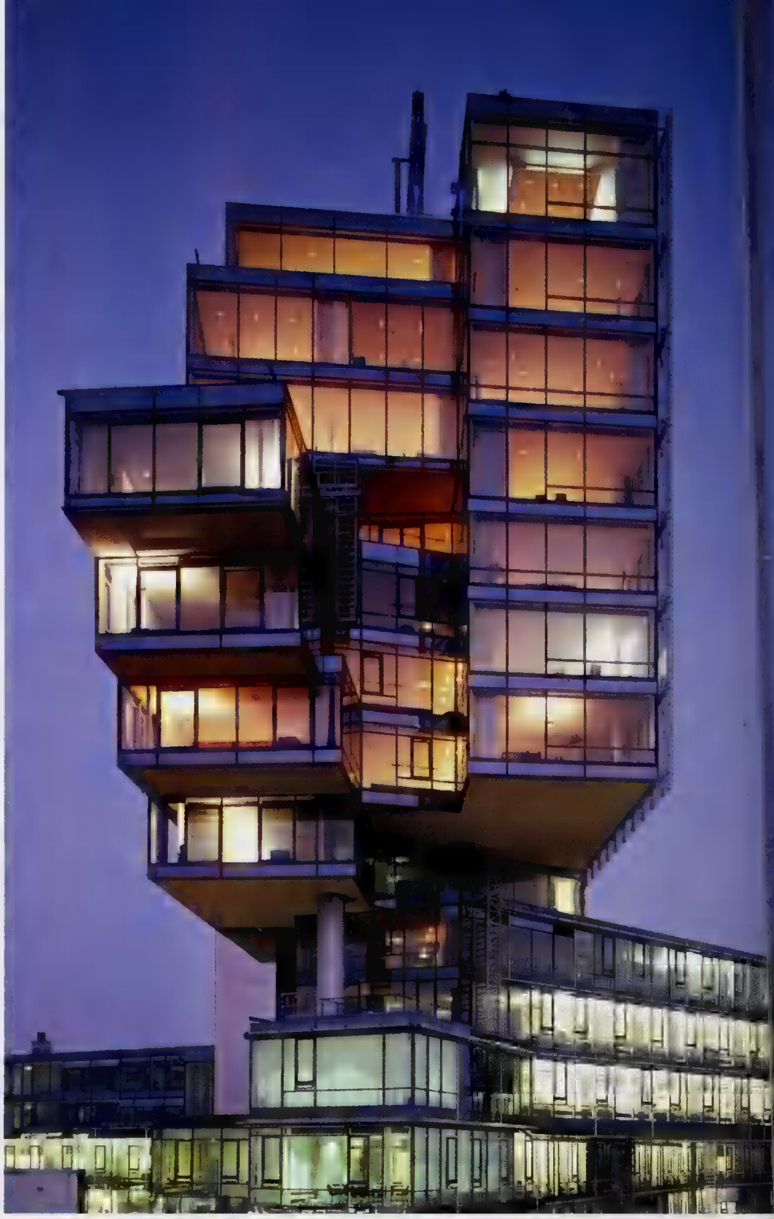
Bringing together 1,500 employees, formerly dispersed over 15 separate locations, the 840,000-square-foot complex occupies a large city block. In response to this nexus of neighborhoods and the scale of Hannover's old quarter, the new building meets the busy artery of Friederichswall with a low base: ground-floor shops beneath two floors of offices, embracing a publicly accessible inner courtyard with a reflecting pool and wooden decks. The low perimeter block of offices surrounds three sides of this courtyard—traversed at various heights by glass tubelike passageways connecting the wings of the building. (Incorporated into the new complex is the landmark 19th-century Siemens Building, now used as a training center with separate access.) The nearly 230-foot-tall tower—a beacon in the larger urban context—houses primarily offices and meeting rooms, with executive dining rooms and boardrooms at its top. Crowning the tower is a 65-foot-high sculpture of glass panes, coated with a metal film that changes color with the position of the sun and nighttime illumination by diodes.

The lobby is a four-story-high, semipublic space—the actual

Tracy Metz is RECORD's Amsterdam-based correspondent.

Project: *Norddeutsche Landesbank am Friedrichswall, Hannover, Germany*
Architect: *Behnisch, Behnisch & Partner—Günter Behnisch, Stefan Behnisch, Günther Schaller, partners; Martin Haas, Jörn Genkel, project leaders; Alexandra Burkard, Martin Gremmel, Dominik Heni, Bettina Maier, Klaus Schwägerl, Jorg Usinger*
Project management: *NILEG*
Engineers: *Arge Tragwerksplanung, Wetzel & von Seht; Pfefferkorn*
Consultants: *Transsolar Energietechnik (energy); Christian Kandzia (color); Becker & Becker, Lindhorst, Grabe, Taube/Goerz/Liegat (environmental)*





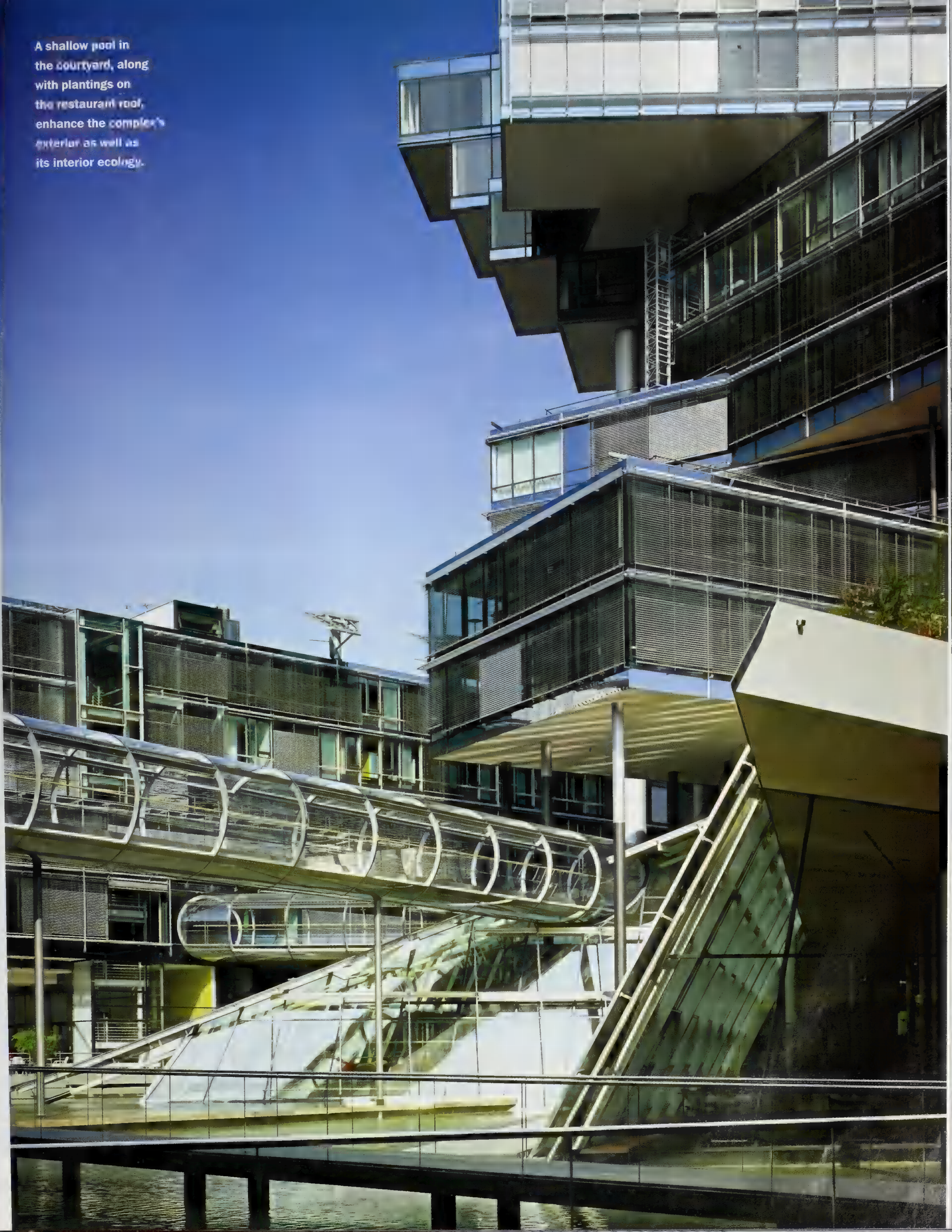
Scaled-down massing at the block's perimeter allows Nord/LB to meet adjoining neighborhoods with a low-rise base (right). Closer to the center of the site, the partly cantilevered tower rises up from a courtyard (above). Glazed, tubelike passageways (opposite) traversing the courtyard and connecting the building's wings have roofs that can open in warm weather.

bank offices, and concomitant security measures, start on the second floor—covered by a sloping glass wall with louvers for climate control. To one side is the "forum," a space that doubles as art gallery and lecture hall. In the lobby, an extraordinary floor bridges height differences not with stairs but through a seemingly infinite number of slightly ramping triangular planes, keeping the space fluid but sometimes playing fleeting tricks with your sense of balance. This entry area also provides access to a two-level underground parking garage and the ground-floor company restaurant, just beside the tower lobby. The restaurant's roof is abstractly shaped like butterfly wings and covered with earth and vegetation that varies with the seasons. Waterside decks around the indoor dining areas invite employees to lunch in the courtyard, accompanied by the babble of water flowing like a curtain over a low wall.

Spectacular aspects aside, Behnisch, Behnisch & Partner won the international competition for this building in part because of the firm's skill in reducing energy use, bringing in daylight, and ensuring worker comfort. In Nord/LB, the ground floor plays a key role not only in mediating between existing neighborhoods and providing an enjoyable setting, but in achieving the building's energy goals. As in earlier Behnisch work, such as the Dutch Institute for Forestry and Nature Research [RECORD, January 2000, page 96], the courtyard—with low roof plantings (on the restaurant) and water elements—helps improve the interior microclimate, providing cleaner air to ventilate and cool the building.

(continued on page 137)

A shallow pool in the courtyard, along with plantings on the restaurant roof, enhance the complex's exterior as well as its interior ecology.



High-Tech Tools Give German Engineers Low-Tech Solutions

The climate-control engineers at Transsolar Energietechnik in Stuttgart, Germany, had two primary goals in mind when they set out to plan an energy-efficient complex for Norddeutsche Landesbank. The first priority was to surpass the 1997 German insulation regulations by 10 percent, and then to create environmentally sensitive measures at a reasonable cost. According to Peter Voit, project leader for Transsolar, because energy consumption for winter heating is comparatively low, attention was focused on the reduction of costlier environmental necessities—ventilation, cooling, and lighting.

Harnessing natural ventilation to cool the offices rather than installing air-conditioning was a logical choice, since temperatures in Hannover only rise above 72 degrees Fahrenheit about 5 percent of a year. However, this strategy is much more complex than merely installing operable windows. Specifying the optimal glazing systems requires careful study of the weather, solar radiation, and daylighting routines, as they impact each other's effectiveness.

Transsolar is part of a consortium that continues to develop TRNSYS, an open-code program commercially available since 1975 that simulates the transient performance of thermal-energy systems. This tool, along with FIDAP (software for numerical air-flow simulation, particularly in natural ventilation systems or the study of air currents inside rooms) and RADIANCE (software for evaluating the quality of illumination based on the luminance of both natural and artificial lighting), aided the engineers in resolving an interrelated set of environmental concerns.

The core of the planning activities focused on the design of the standard offices. The goal was to allow office workers control over heating, window openings, lighting, and shading devices in a system that required no mechanical ventilation and cooling. As the wall sections show, ducts exhaust air to vents in the roof. Their location in the corridors helps mitigate sound. The exhaust system relies mostly on the chimney effect, when outdoor temperatures are below 50 degrees. Even when electrically driven fans are needed, the energy they use is negligible. Such efficiency eliminated the need for a heat-recovery system.

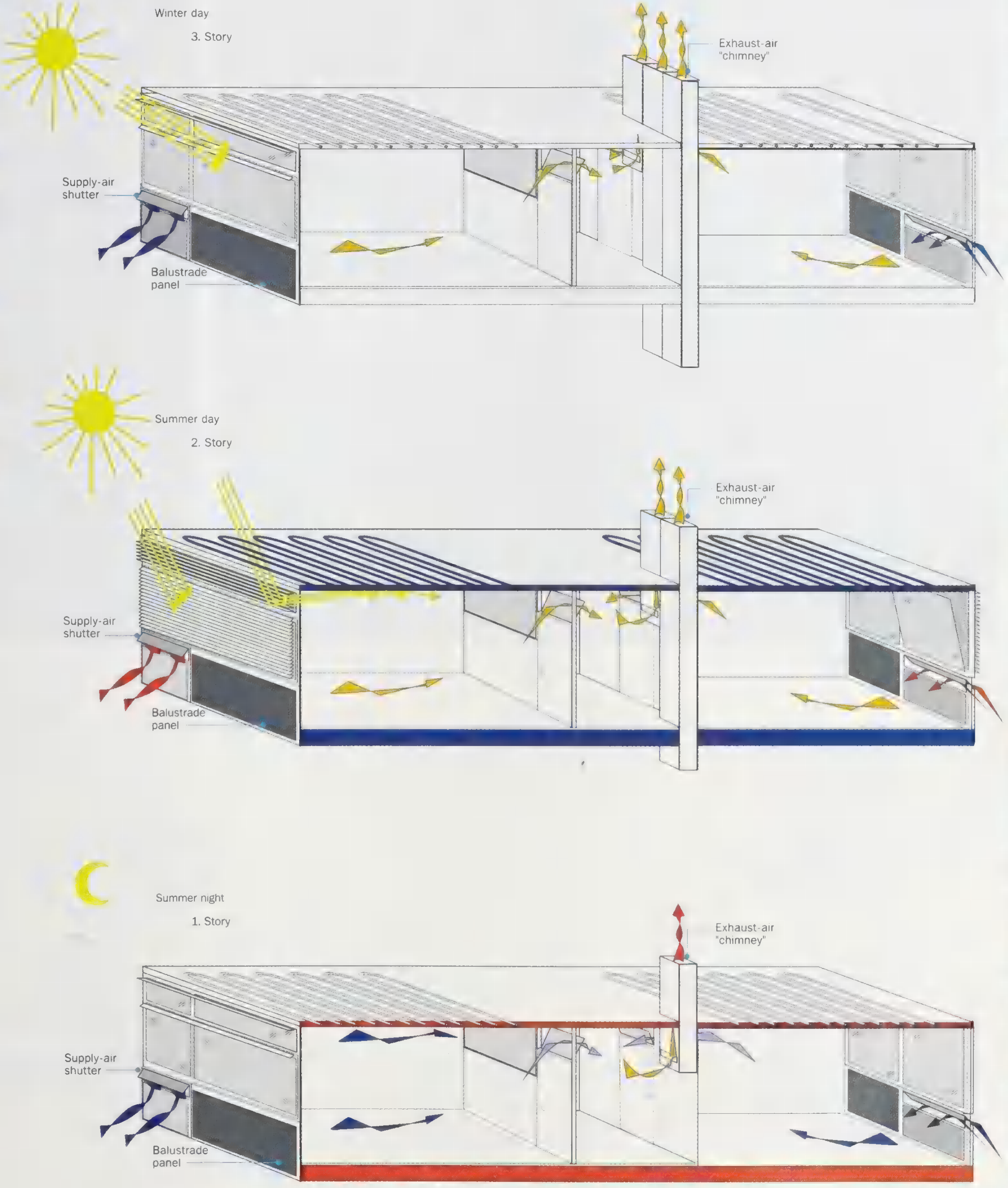
On the one hand, protection from solar heat gain is necessary if a building is to be naturally ventilated. On the other hand, shading devices should not block out daylight if that's the major source of illumination in the offices. In the case of Norddeutsche Landesbank, adjustable, highly reflective aluminum sun blinds within the double-glazed units allow reflected light into the interior while blocking solar radiation.

Transsolar also took advantage of the earth's natural thermostat and incorporated a geothermal heat exchanger and pump. The use of radiant-slab cooling was particularly ingenious. Polyethylene pipes were cast in the exposed-concrete ceiling slabs. Cold water (about 62 degrees Fahrenheit) is pumped through the pipes, generally at night, storing coolness in the concrete surface for delivery to the room in the morning.

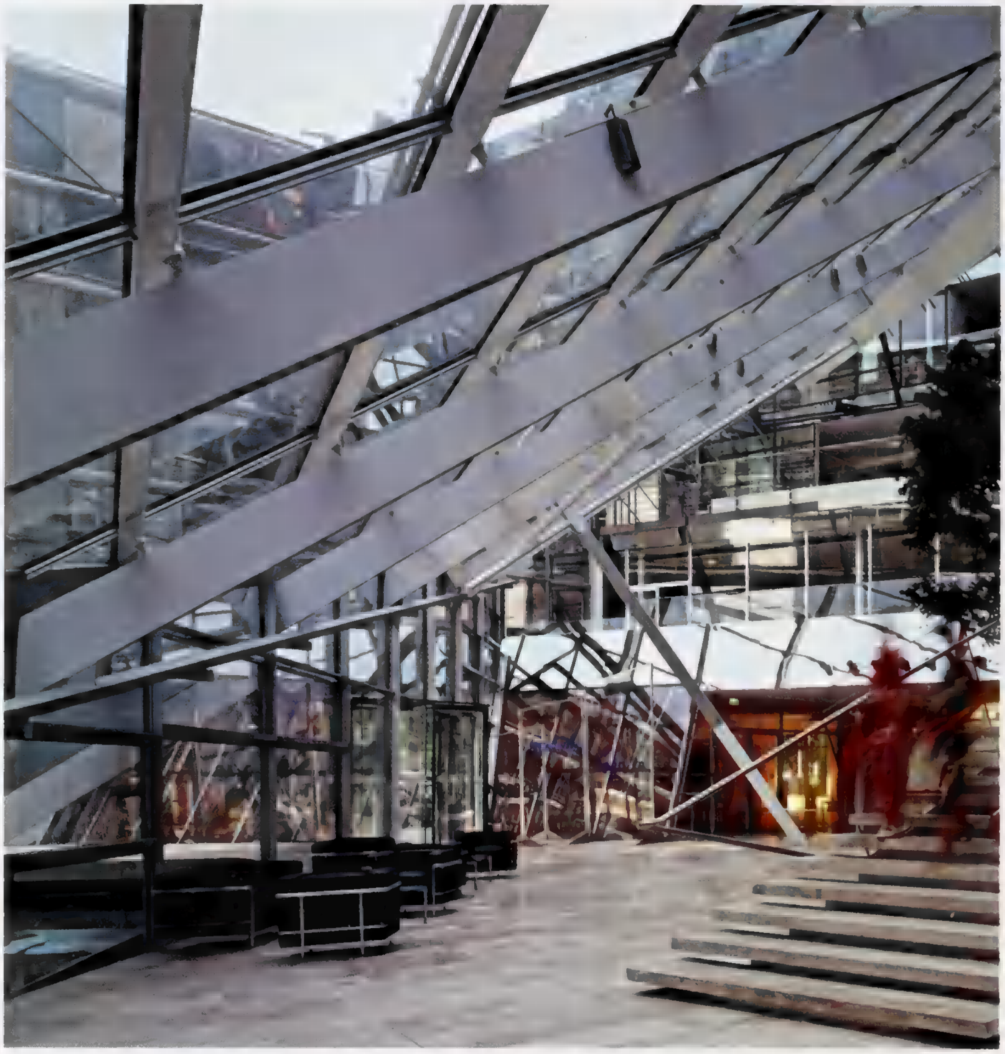
It is clear that climate engineering in Germany has evolved way beyond its counterpart in the United States, and yet none of these strategies is rocket science. The time has come for American architects and engineers to seek alternatives to their high-voltage formulas and begin to work unplugged. *Sara Hart*

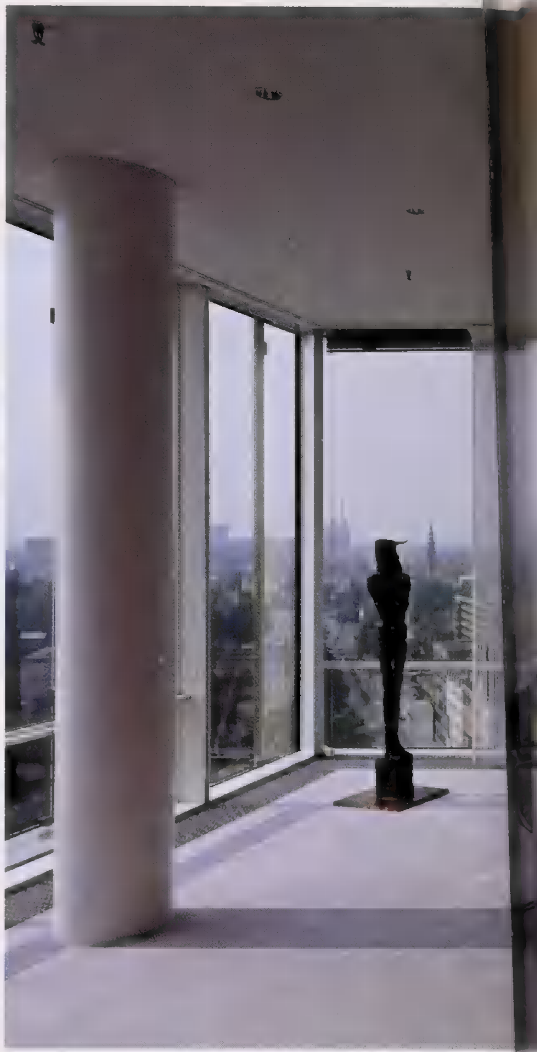
AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION *This month's Continuing Education Opportunity includes three special building-science sections, on pages 116, 128, and 142. For learning objectives to focus your study while reading these sections, turn to the Projects introduction on page 109. To receive credit, turn to page 147 and follow the instructions. As always, archrecord.com has this story and more continuing education.*

The offices provide high levels of comfort at low operating costs during all seasons. Outside air is drawn through the space and exhausted through vents in the corridor that lead to chimneys (diagrams at right). During summer evenings, warm air is chilled by cool-water pumps through pipes embedded in the concrete ceiling. Highly reflective louvered blinds (opposite, bottom left) convey light into the interior while blocking solar radiation.

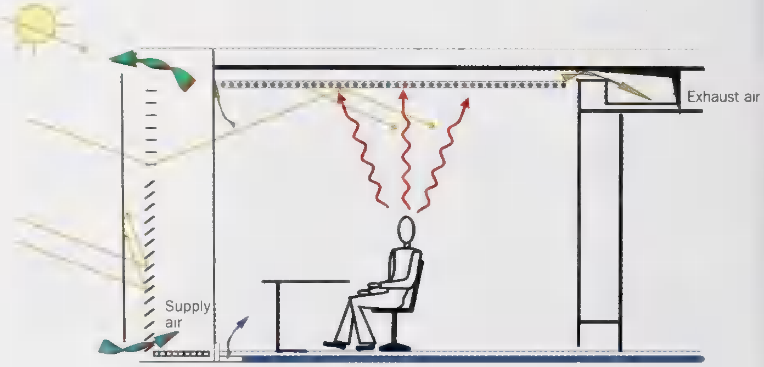


SHADING AND VENTILATION DIAGRAMS



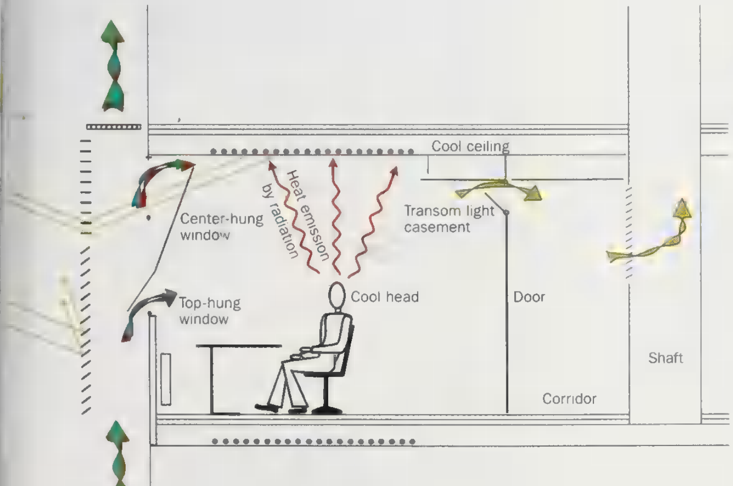


The lobby (above) is a four-story-high semi-public space covered by a sloping glass wall with operable louvers for climate control. This area provides access to subterranean parking, the adjacent company restaurant, the courtyard, and the tower itself. Executive offices and meeting areas occupy the upper reaches of the tower (above left, center, and opposite, right).

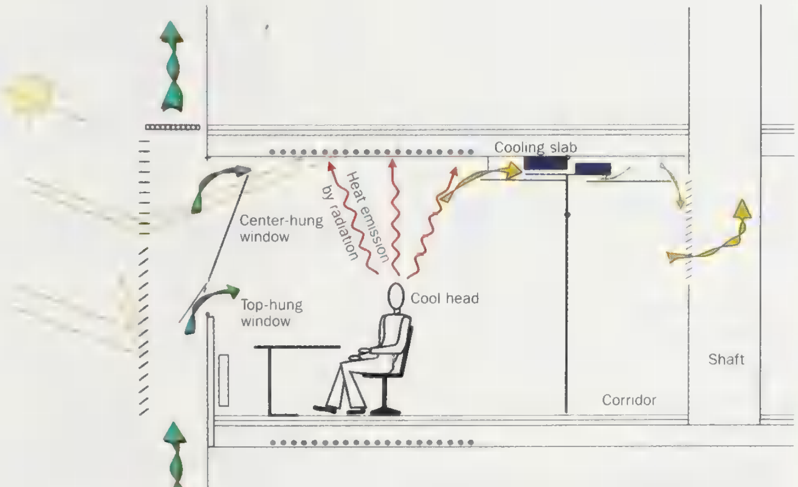


AIR EXHAUSTED THROUGH CEILING TO DUCT

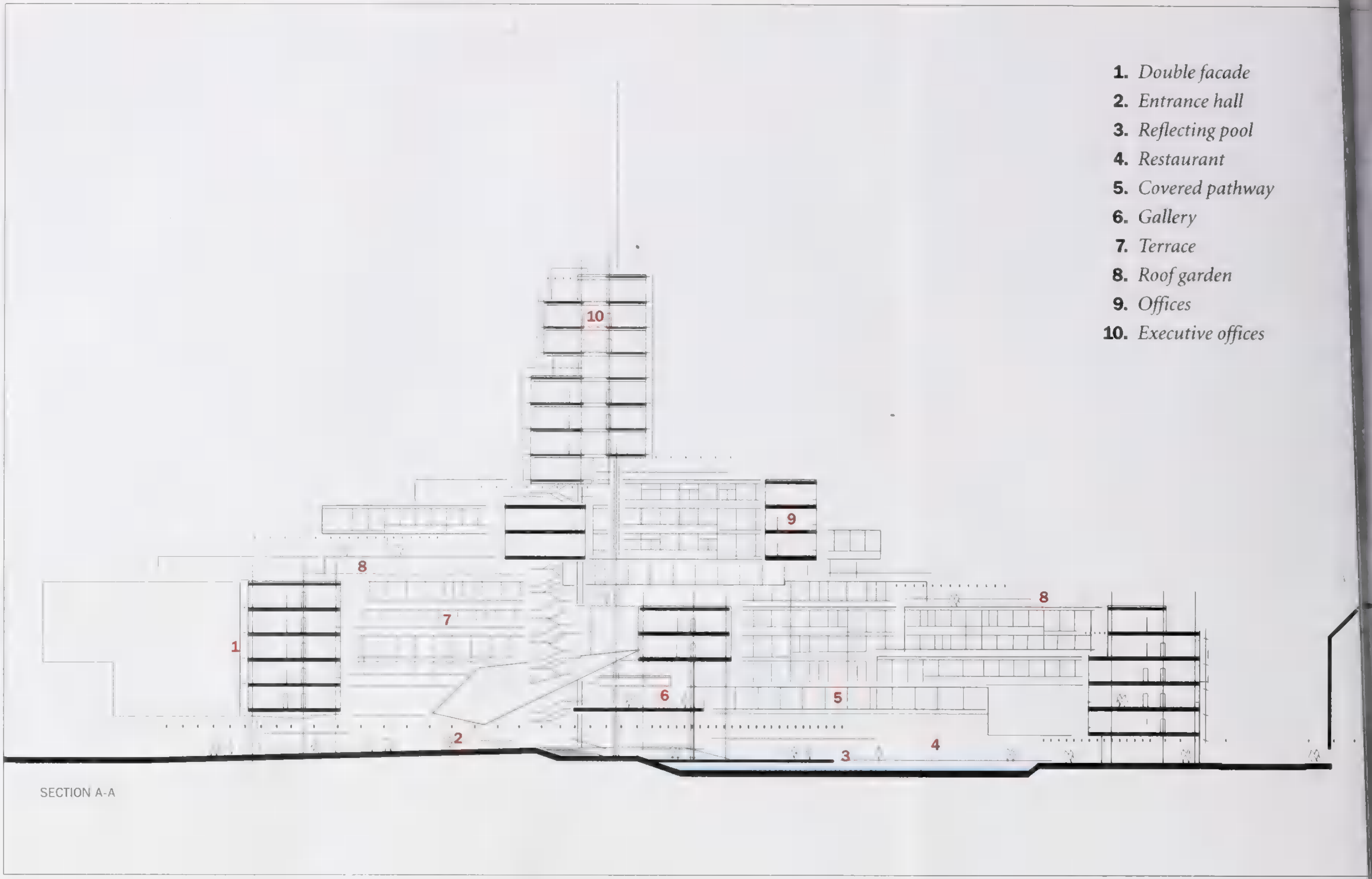
DIAGRAMS SHOWING AIR FLOW



AIR EXHAUSTED THROUGH SUSPENDED CORRIDOR CEILING



AIR EXHAUSTED THROUGH TRANSOM BENEATH SUSPENDED CORRIDOR CEILING

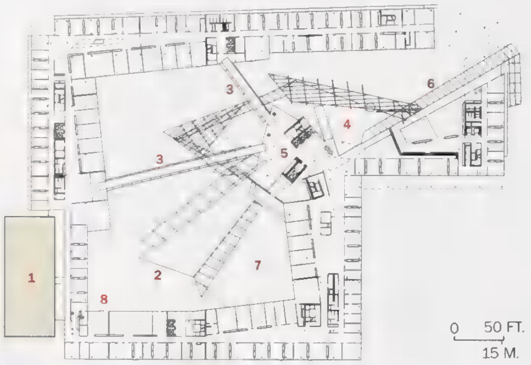


1. *Double facade*
2. *Entrance hall*
3. *Reflecting pool*
4. *Restaurant*
5. *Covered pathway*
6. *Gallery*
7. *Terrace*
8. *Roof garden*
9. *Offices*
10. *Executive offices*

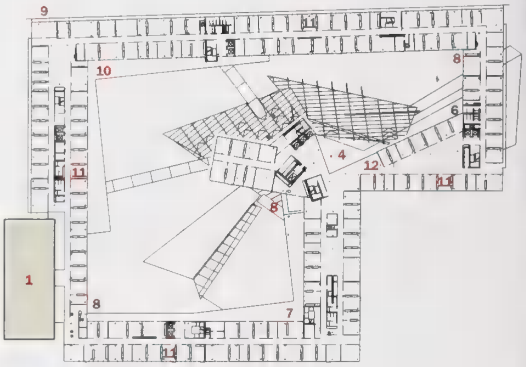
SECTION A-A

Plantings covering the roof of the staff restaurant (opposite, top right) varies with the seasons and helps refresh the courtyard microclimate. The building's articulation of many parts becomes even more pronounced at night (opposite, top left).

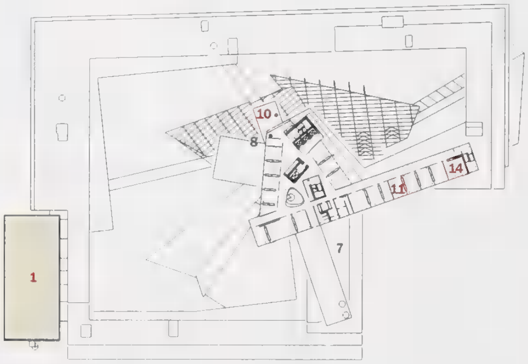
In cross section (above), the bank's mix of public spaces, outdoor terraces, and offices becomes apparent. The floor plans (right) show the pinwheel-shaped placement of the cantilevered upper floors of offices.



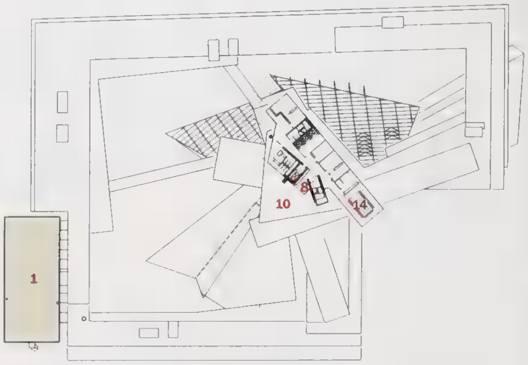
FIRST FLOOR



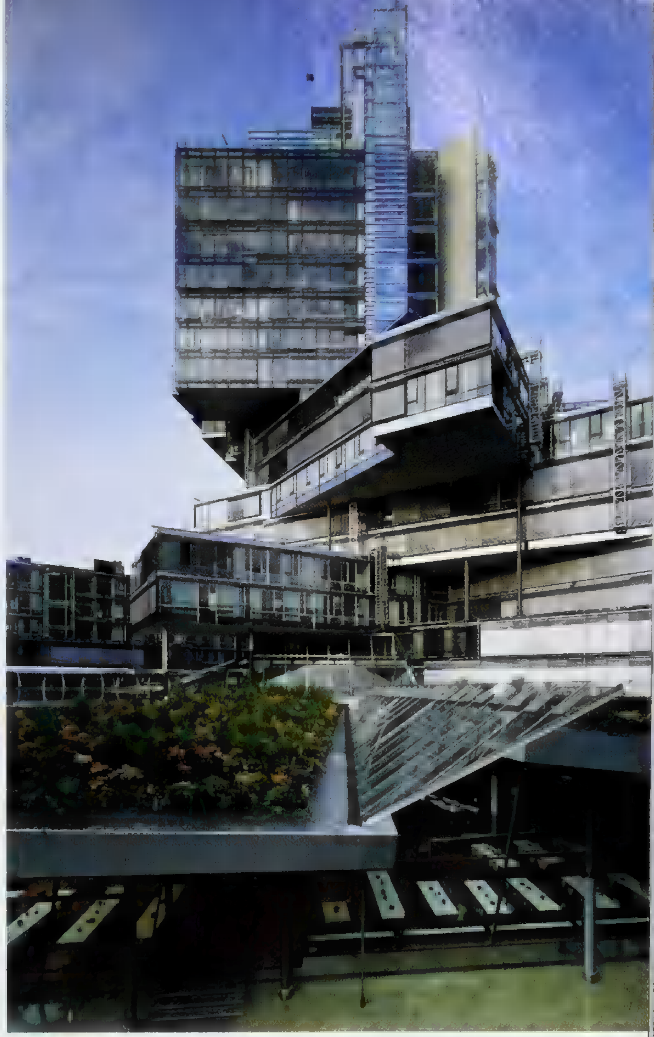
THIRD FLOOR

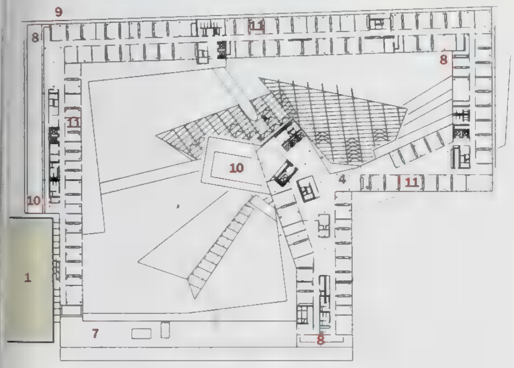


EIGHTH FLOOR

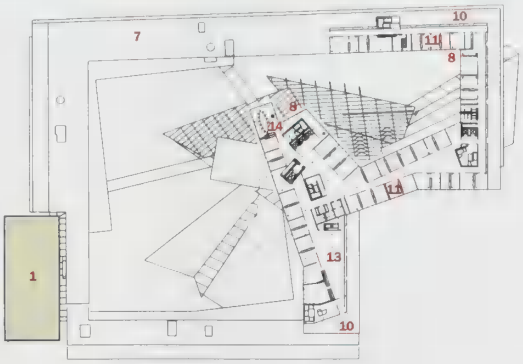


TENTH FLOOR



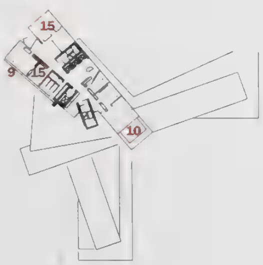


FIFTH FLOOR

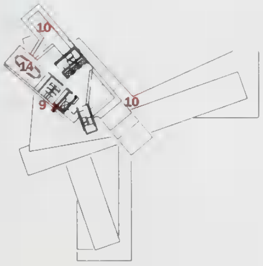


SIXTH FLOOR

1. *Existing building*
2. *Courtyard*
3. *Covered pathway*
4. *Entrance hall*
5. *Lobby*
6. *Terrace*
7. *Roof garden*
8. *Social area*
9. *Double facade*
10. *Roof terrace*
11. *Office*
12. *Gallery*
13. *Library*
14. *Conference room*
15. *Executive office*

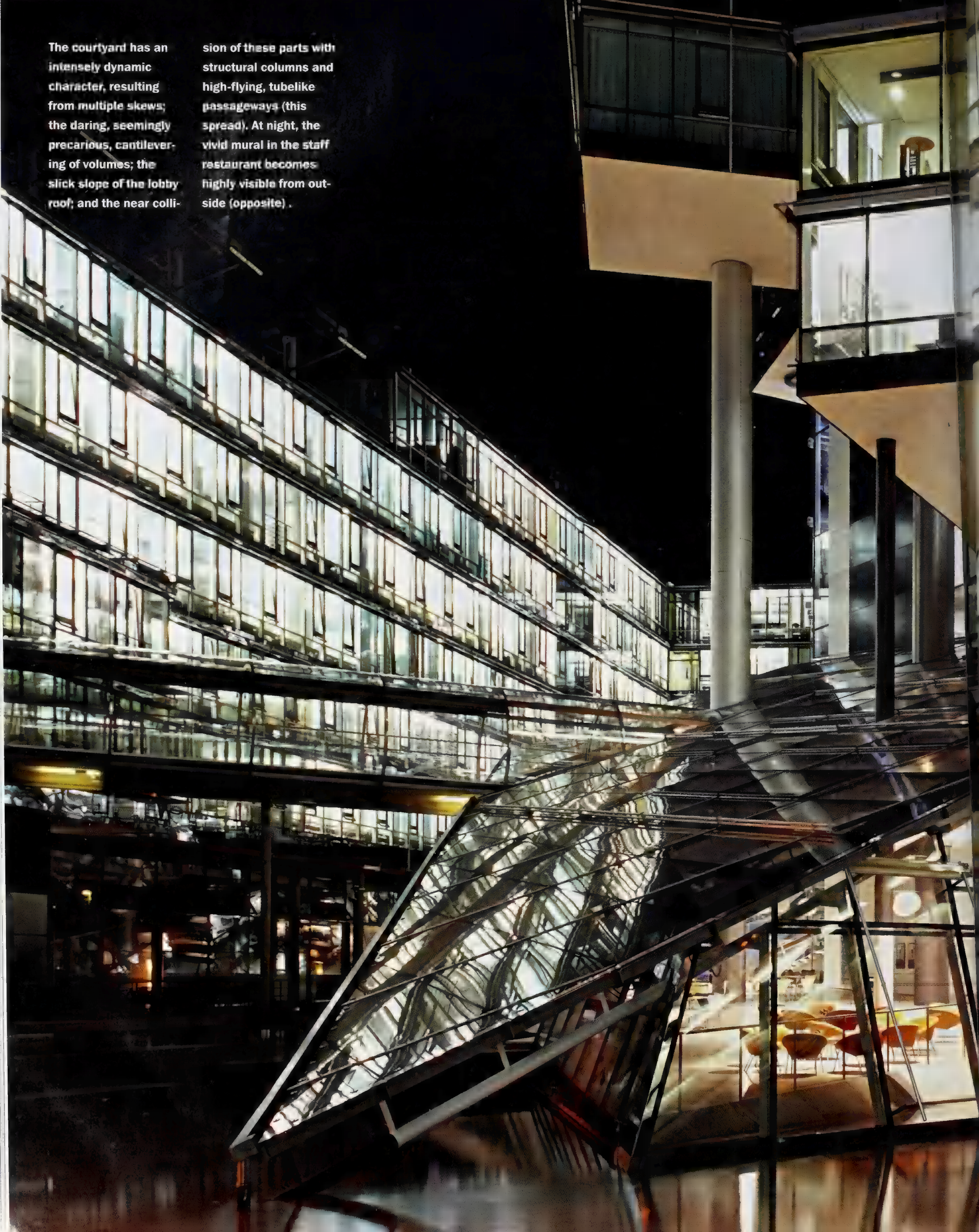


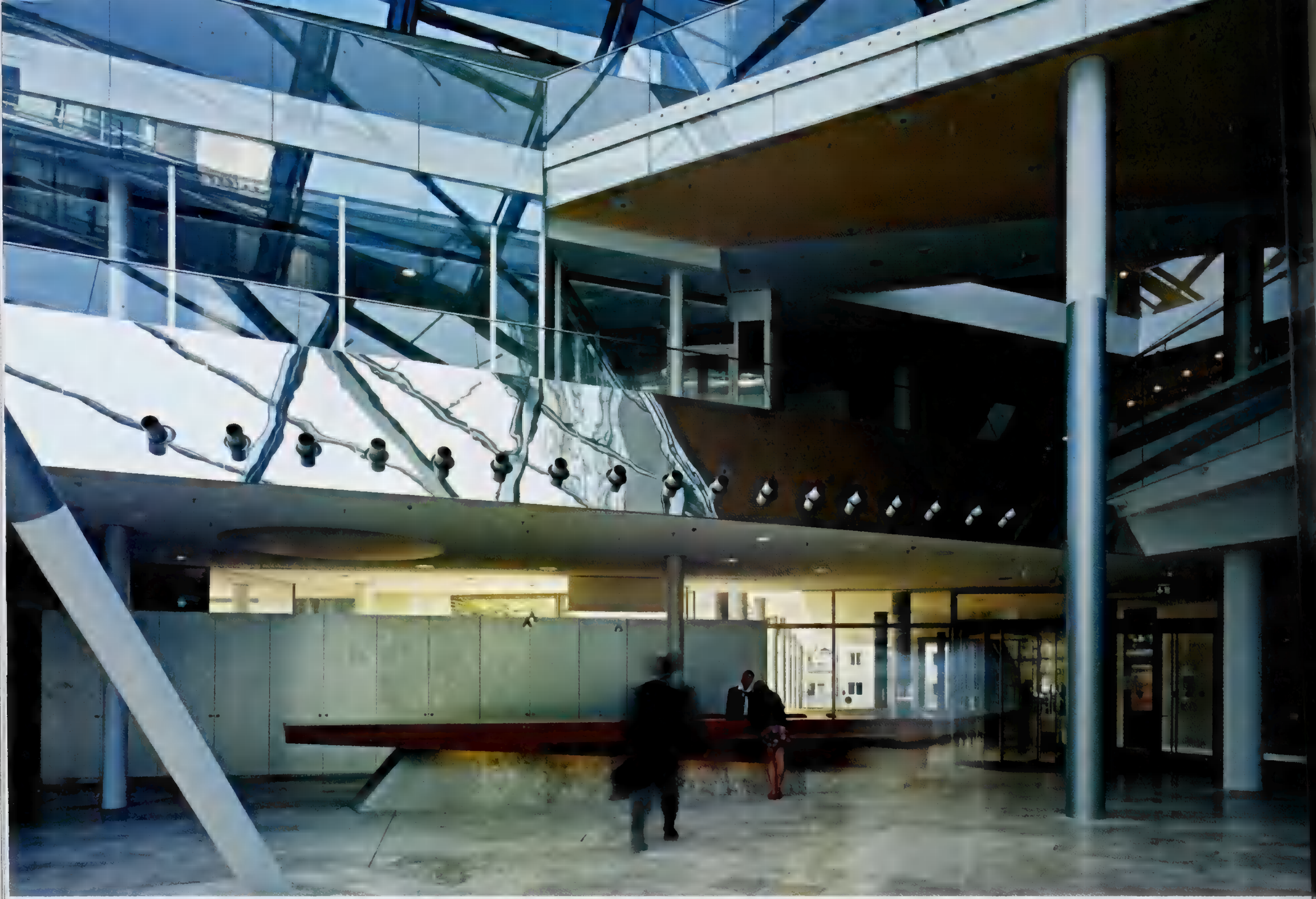
ELEVENTH FLOOR

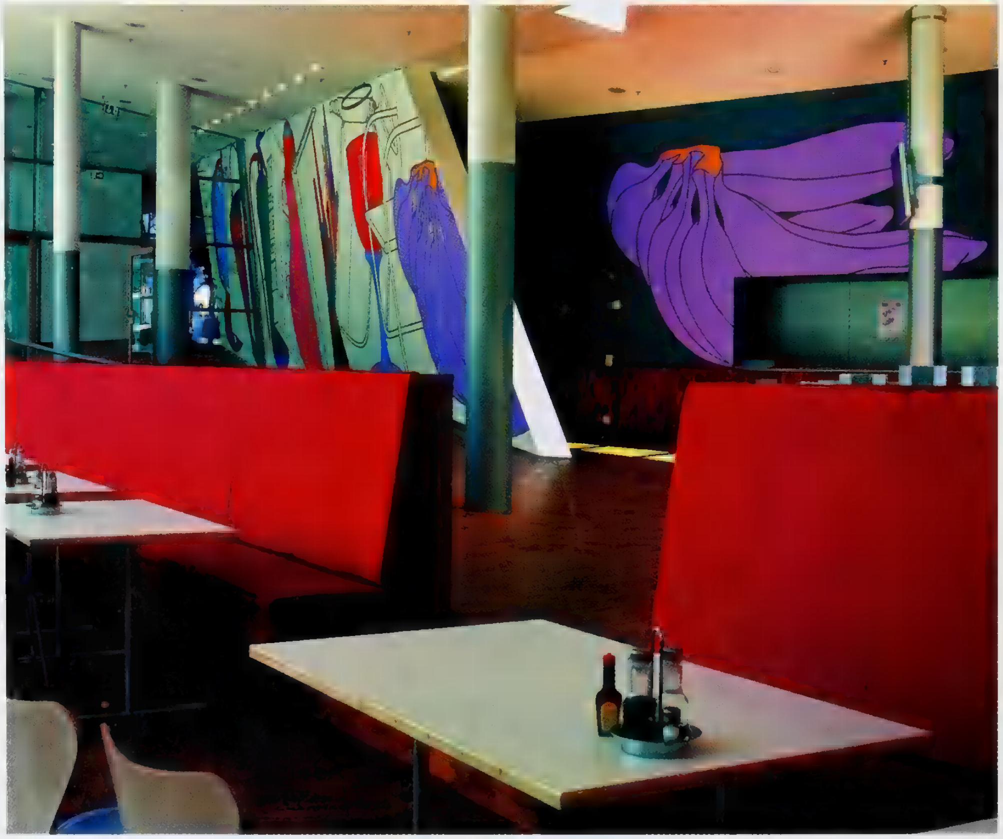


FOURTEENTH FLOOR

The courtyard has an intensely dynamic character, resulting from multiple skews; the daring, seemingly precarious, cantilevering of volumes; the slick slope of the lobby roof; and the near collision of these parts with structural columns and high-flying, tubelike passageways (this spread). At night, the vivid mural in the staff restaurant becomes highly visible from outside (opposite) .







The lobby, with its overhead walkways, echoes the building's skewed and intersecting forms. A mural by British artist Michael Craig Martin enlivens the staff restaurant (left). The low-rise section of the complex (opposite) incorporates an elevation of the preexisting Siemens Building, now an interior wall facing daylit balconies off a company training zone. Martin painted this elevation with the identifying *Nord/LB* in colorful supergraphics.

PHOTOGRAPHY: © CHRISTIAN KANDZIA (BOTTOM)

(continued from page 126) The offices have no air-conditioning—unusual in German commercial high-rises, most of which have either air-conditioning or mechanical ventilation systems with controlled fresh-air supplies and exhaust-air extraction. Here, the tower's load-bearing structure—consisting of two 3-foot-thick columns with concrete cores wrapped in heating spirals—is cooled by a low-energy system using cold ground water, pumped from 66 feet below the ground, about 6 feet below the water table. The tower relies on concrete ceilings for its storage mass. Water, running through pipes in the tower's ceilings, gets cooled in soil heat-exchanger tubes in 120 foundation piles, where the heat is removed in the summer and can be stored for winter use. The seasonal storage and pumped circulation of ground water constitutes the building's main heating system, but conventional zone heating backs it up. For the whole complex, the annual balance of heat supplied to and extracted from the ground is equal. Though the system itself is not new, it is atypical for such a large building.

Allowing each employee to make local adjustments to workplace temperature and airiness, the windows are individually operable. Offices on the building's low perimeter, facing the traffic artery, are double glazed against noise and car fumes, but even here, the inner windows are operable. Depending on orientation, some windows are protected by foil dot patterns applied to the glass, while others have external sunshades—operable both centrally and from workers' individual controls. The upper slats of the sunshades are angled specifically to direct illumination inward and keep out glare. To bring light into the courtyard, computer-driven mirrors on its surrounding facades redirect rays into shadowy corners.

The importance the architect attached to creating a pleasant and comfortable work atmosphere is apparent everywhere, not only in the nuances of shading, the refreshing courtyard, and the operable windows. Though many workers had to adjust to the "fishbowl" distractions and lack of privacy created by glass walls onto interior corridors, the daylight admitted was welcome from the start. And everyone seems to enjoy the informal interaction and information exchange at the many strategically placed coffee corners. Plan variations from floor to floor allow for many office types, from open layouts to cells and team offices.

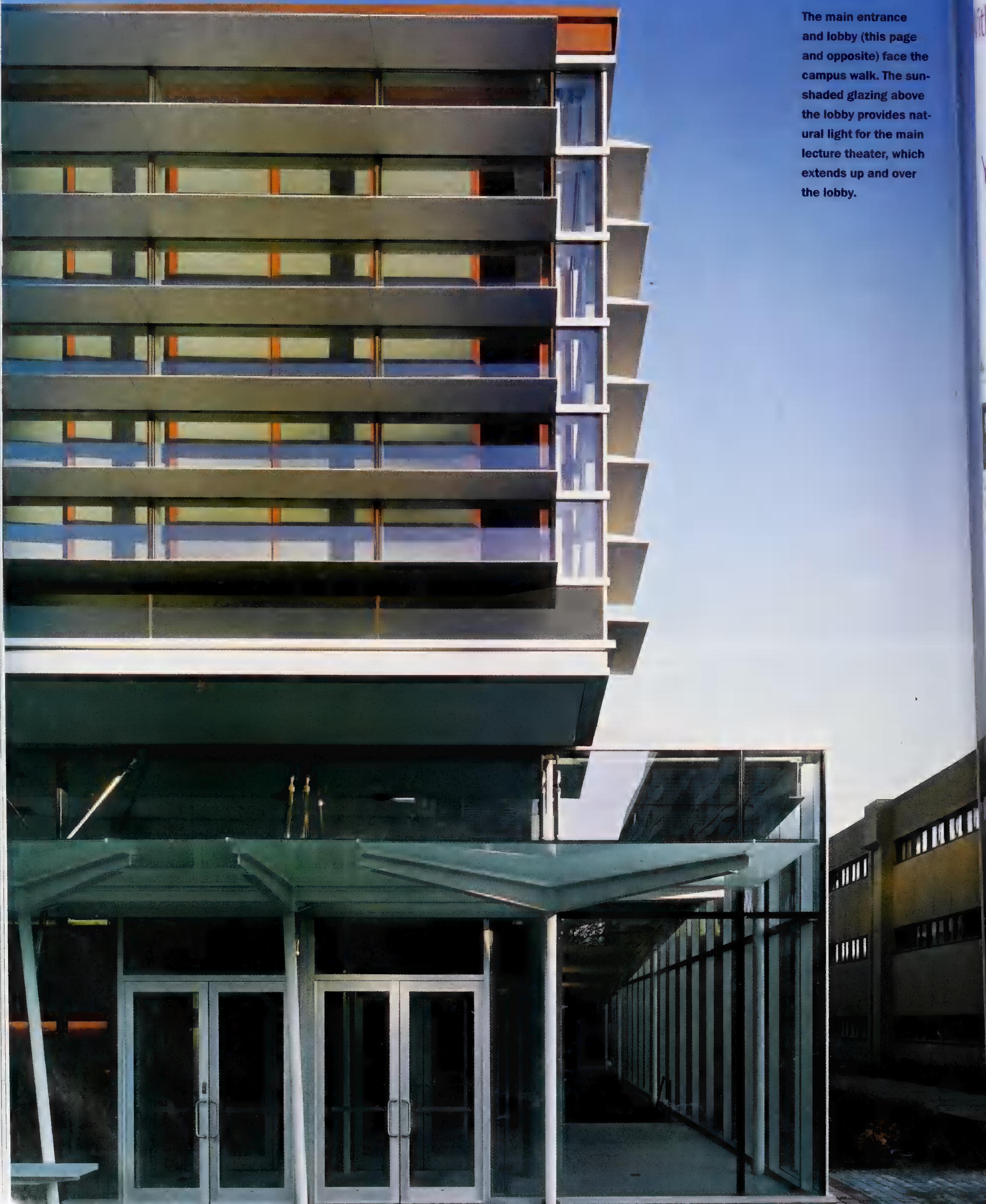
In the staid world of German banking, the choice of an unorthodox, noncorporate office like Behnisch, Behnisch & Partner represents a major leap. In a statement, C.E.O. Manfred Bodin admitted that "for us bankers, it was not always easy to follow the highly creative approach of the architects." But in the process, Behnisch clearly managed to satisfy traditional executive needs. On the tower's 11th through 17th floors, where the nine top executives have their offices, private dining rooms, a "sky lounge," a conference room, and a large dining room for guests are all designed with understated chic. And by choosing architecture that is both environmentally sustainable and visually striking, Nord/LB sends a message far and wide, sharpening its social image and promoting a forward-looking reputation. Among the locals, reactions to the new building seem strong, yet mixed: People either love or hate it. ■

Sources

Curtain wall: *Rupert App GmbH*

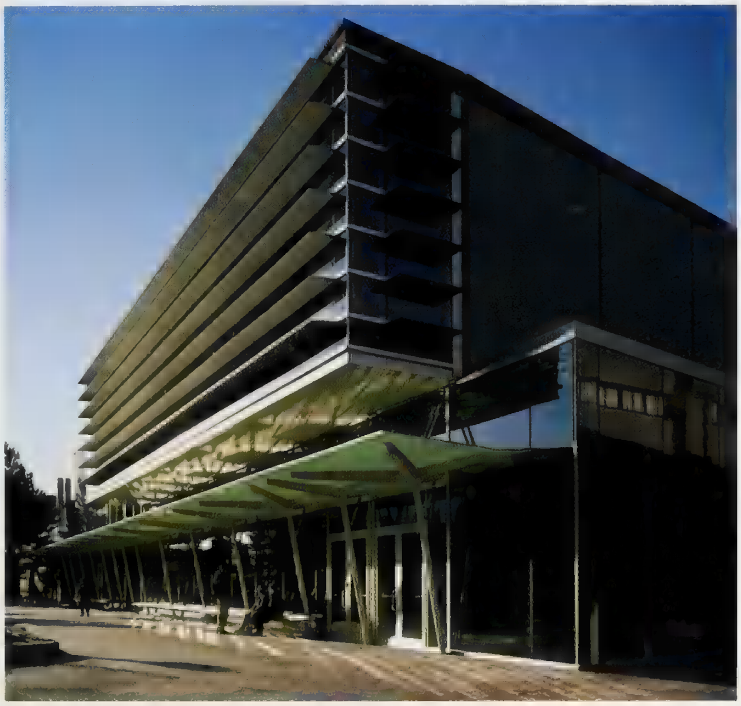
Glazing: *Glas-Fischer GmbH*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



The main entrance and lobby (this page and opposite) face the campus walk. The sun-shaded glazing above the lobby provides natural light for the main lecture theater, which extends up and over the lobby.

Without architectural fanfare, Busby + Associates and architectsAlliance demonstrate sustainability in a northern climate with York University's COMPUTER SCIENCE BUILDING

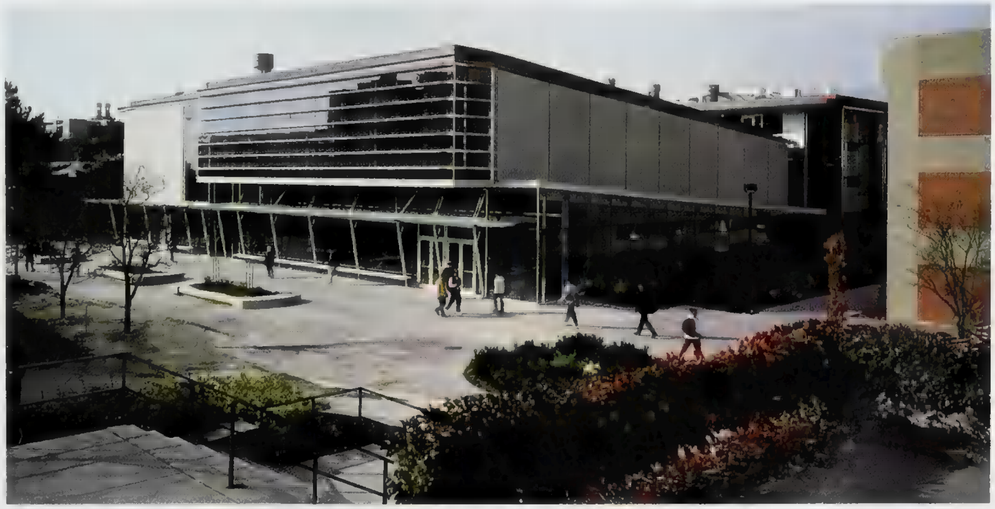


By John E. Czarnecki, Assoc. AIA

Perhaps the best way to describe the Computer Science Building at York University, in Toronto, Canada, is to be clear about what it is not. It does not offer the architectural spectacle that the Greater London Authority Headquarters and the Norddeutsche Landesbank, both featured in this issue, possess. A low-lying structure tucked discreetly into a campus, the York building lacks the landmark presence in an urban cityscape that distinguishes those two projects. However, in the Toronto climate of harsh winters and hot summers, the York facility provides one of the best examples of North American institutional architecture that fully integrates environmentally sustainable features into an intelligent design. It avoids the aesthetic clichés associated with "green."

Located in far northwestern Toronto on a stark campus of many concrete Brutalist buildings constructed in the 1960s and '70s, the Computer Science Building was designed by Busby + Associates Architects, of Vancouver, in a joint venture with architectsAlliance, of Toronto. It replaces an existing computer science building, completed in the mid-1990s, that was quickly perceived as too customized and not appropriate for changing technological needs. "That building didn't evolve," says Adrian DiCastri, a partner with architectsAlliance.

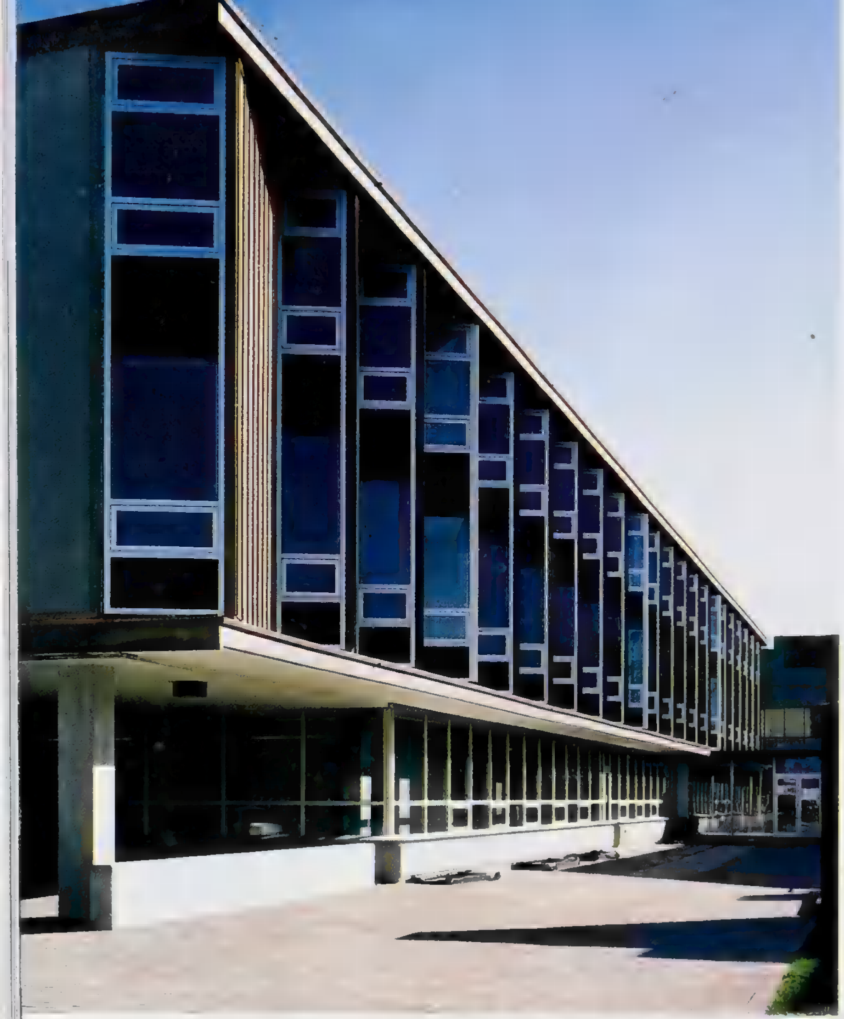
York University, with a number of facilities recently completed or currently under construction, also foresaw a need for greater building flexibility to address an upcoming surge in enrollment. The university has coupled its demographic foresight with an environmental commitment. In the past decade, in both its curriculum and campus setting, it has pursued a green agenda and now has sustainable guidelines for all new buildings. Having a savvy client enabled the team of Busby and architectsAlliance to fully develop an environmentally sustainable building from the start.



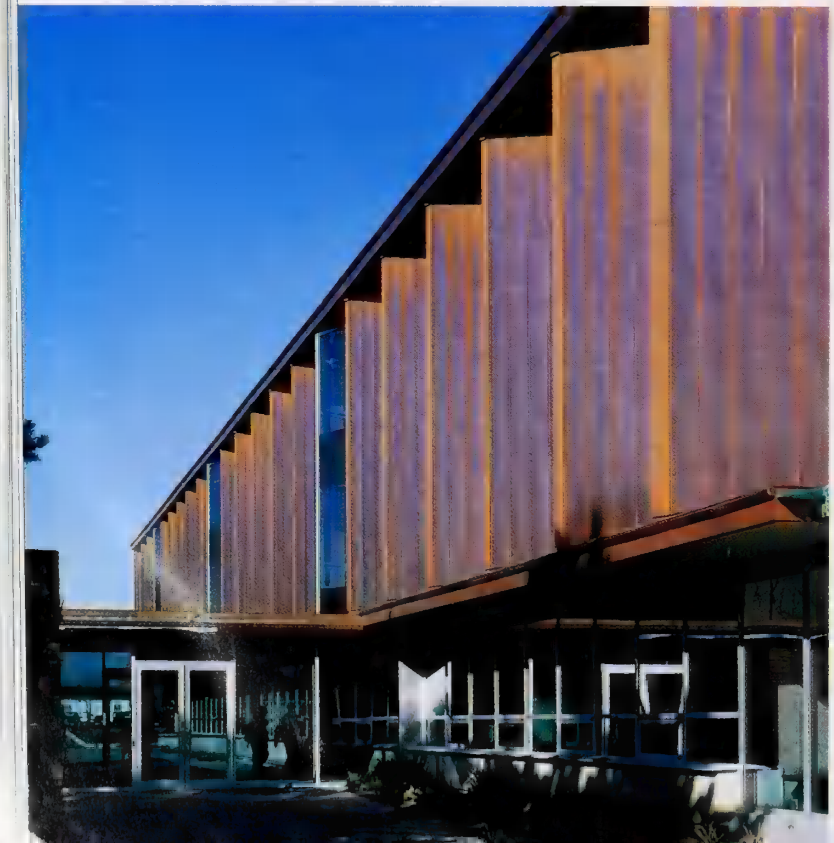
Simple in plan, complex in building intelligence

Opened in spring 2001, the 101,400-square-foot York University Computer Science Building comprises the largest green institutional building in Canada. Built for only $11.1 million, or $110 per square

Project: *Computer Science Building, Toronto, Canada*
Owner: *York University*
Architect: *Busby + Associates Architects—Peter Busby, partner in charge; Mike McColl, associate in charge; Veronica Gillies, Alfred Waugh, Susan Ockwell, team; architectsAlliance—Adrian DiCastri, partner in charge; Walter Bettio, project architect; Barbara Zee, team*
Engineers: *Keen Engineering (mechanical); Yolles Partnership (structural); Carinci Burt Rogers (electrical)*
Landscape: *John Lloyd & Associates*



The copper-clad facade with a sawtooth pattern on the building's east and west sides (west side shown here) allows for winter solar gain and summer shade on the east; it is oriented for northern light on the west.



foot, the straightforward plan allows flexibility. Situated snugl between two existing academic buildings—fitting the campus maste plan's call for increased density—the front of the computer scienc building faces a walkway to the south. The three-story structure, wit two, 200-seat lecture halls in the basement, is composed primarily o three volumes: a bar of laboratories and offices extending the length o the building's western edge, a courtyard at the northeast corner surrounded mostly by offices, and a volume with a 950-seat lecture hall and the main entrance at the southeast corner. The plan of the entire structure was based on a 30-foot module. Learning a lesson from the previous, overly customized computer science building, the architects designed most interior walls in the bar and courtyard volumes of this new structure as partitions that can easily be removed or repositioned for new configurations. All mechanical, data, and electrical systems are connected through continuous cabinets along the building's perimeter—a distributive system allowing for easy modifications. Currently a home to computer science, the building can readily be adapted to another academic or office use at any time in the future.

THE BUILDING CAN READILY BE ADAPTED TO ANOTHER ACADEMIC OR OFFICE USE AT ANY TIME IN THE FUTURE.

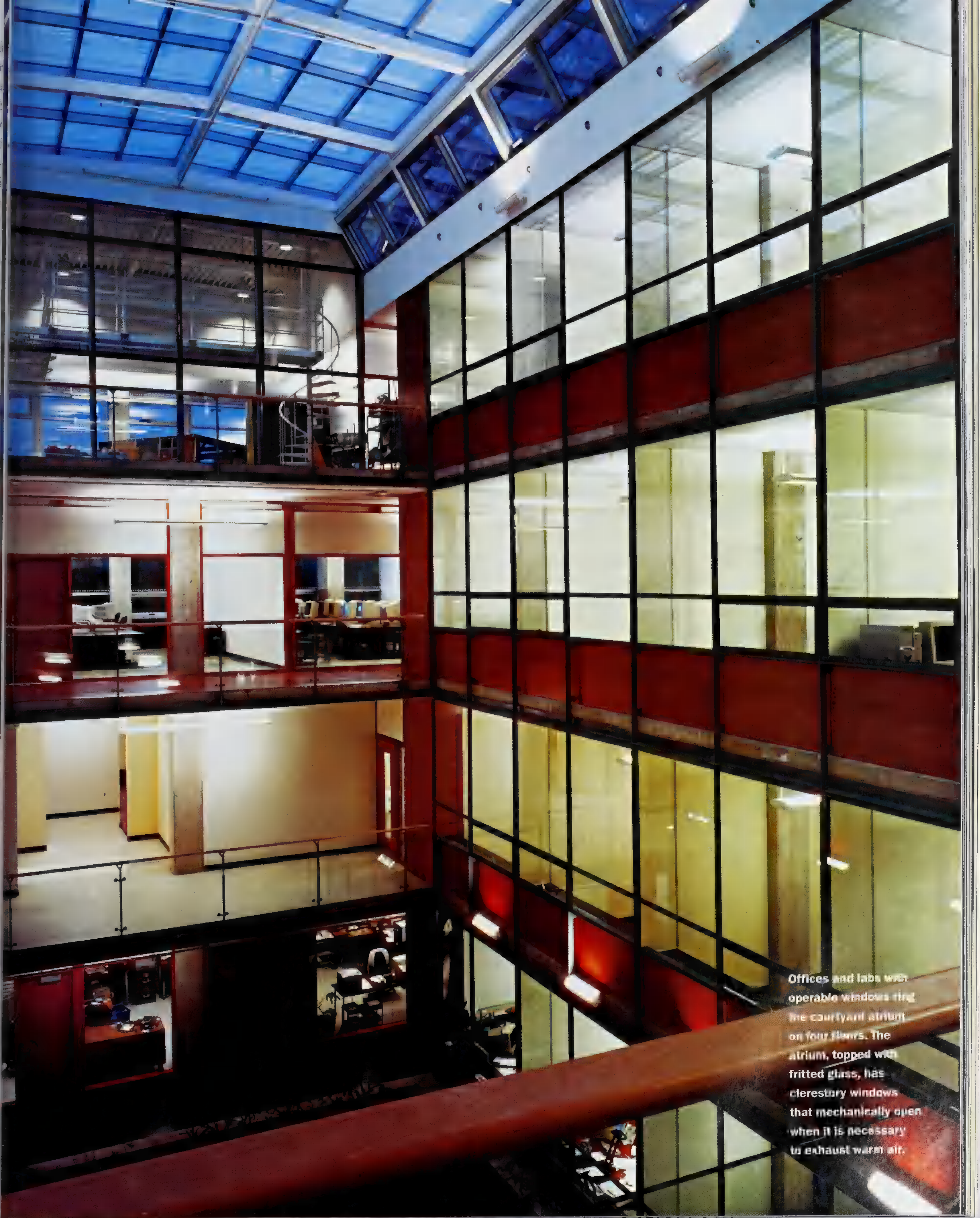
The building's efficient envelope includes a sawtooth-patterned facade clad in copper (pictured left) on the top two floors of the east and west sides. The orientation of the east sawtooth allows for winter solar gain and summer shading, and the west wall is oriented for northern light. The lecture hall, featuring a planted green roof for storm-water retention and thermal reflectance, is clad in precast concrete on its east wall.

A glass wall (featuring glazing with a low-e coating and a 40 percent shading coefficient) faces the campus walkway to the south and has an integrated glass canopy. From the walkway, visitors enter into an entry hall with full southern exposure. The entry hall's ceiling, covered with a maple-veneer acoustic panel, slopes down to a maple bench (see photo, page 145). This simple, Alvar Aalto–inspired design detail warms and humanizes the space that faces the garish Brutalist concrete buildings outside.

The main lecture hall, accessible to the entry lobby, has seating that steps up and over the lobby. The back wall of the hall has glazing facing south, with fabric-covered-wood, floor-to-ceiling louvered sunscreens that can be closed with computer controls. Through numerous discussions, the architects convinced the university to add glazing for natural light along the hall's southern wall because many of the events and classes held in the space do not require darkness.

Form follows function follows climate

Programmatic functions are placed in relation to climate in this building. Labs line the north side—where the building will have the least heat gain—of the top two floors. Every office, lab, and classroom has operable windows either on the perimeter of the building or facing an interior atrium for access to daylight and fresh air. The principle north-south circulation spine forms a double-height atrium, separating the bar volume from the rest of the building. The tree-filled courtyard atrium (pictured at right), with offices primarily on two sides, is topped with fritted glass as well as clerestory windows that mechanically open in response to the need to exhaust warm air. Building volumes act as continuous vessels for air flow and cross ventilation, drawing air from perimeter windows into the atria, where it is exhausted through the courtyard atrium's clerestory as well as through thermal chimneys in the circulation spine atrium.



Offices and labs with operable windows ring the courtyard atrium on four floors. The atrium, topped with fritted glass, has clerestory windows that mechanically open when it is necessary to exhaust warm air.

York Computer Science Building acts as vessel for natural ventilation

Although designed prior to the implementation of the LEED (Leadership in Energy and Environmental Design) green building rating system, the York University Computer Science Building would likely qualify for a LEED Gold rating, according to the architects.

The building's shape and external shading provide an efficient envelope. Exterior walls, composed primarily of curtain-wall systems, precast concrete, and copper, have a thermal value of R23, and the roof has a value of R35. Ordinary concrete emits greenhouse gases, but the concrete used in this structure is composed of a mixture with at least 50 percent fly ash. The fly-ash concrete will emit far less greenhouse gas than conventional concrete. The building also features a planted roof that allows for evaporative cooling in summer and added insulation in winter. Excess rainwater is collected and stored in a rooftop tank for controlled dispersal into a drain to the ground.

According to the architects, the Toronto climate will allow for natural ventilation without heating or air-conditioning 55 percent of the year. When natural ventilation is adequate for maintaining comfortable temperatures, temperate air is drawn through intake grilles into an underground plenum where air is passively cooled, then drawn into rooms through floor- or wall-based diffusers. In this condition (see middle section diagram, opposite), fan coils are locked out, and windows and stack dampers open to allow cross ventilation. The air rises in rooms and is warmed by building occupants and computers. The exposed concrete structure absorbs, holds, and slowly releases heat before it rises through openings in the building's two atria, creating a pressure differential. Stack effect draws air into operable windows and wind pressure raises the air-change rate, allowing for passive cooling. As outdoor air temperature rises, exhaust fans are turned on to assist ventilation. When heating or air-conditioning is needed, fan-coil units draw in mixed air, heat or cool it, and deliver it to building spaces. A direct digital control system, which manages the heating, cooling, and ventilation, determines the switch-over point from natural ventilation to normal systems and vice versa.

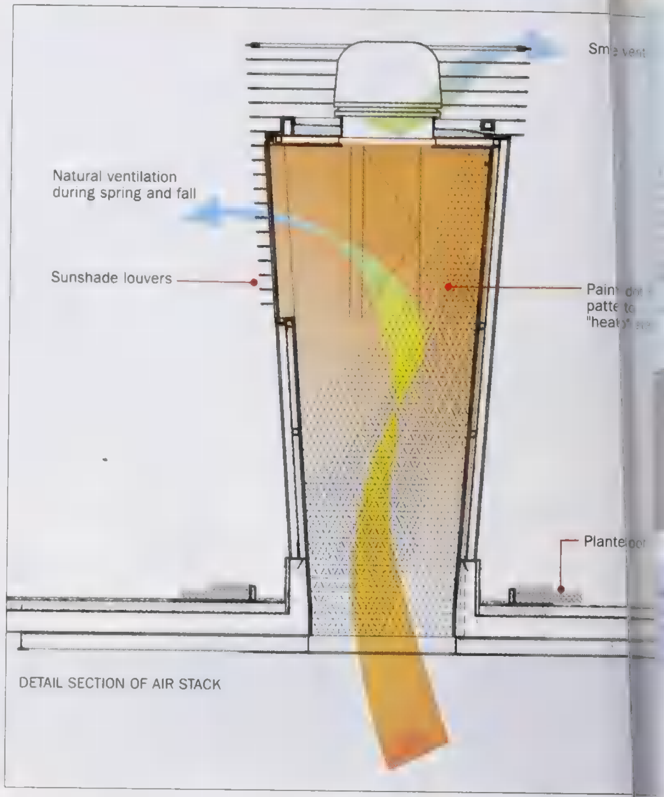
The university implements a broadened thermal comfort range in this building compared to most education structures. Temperatures in offices and labs are kept between 68 and 73 degrees Fahrenheit and between 64 and 79 in public spaces. "That temperature gradient has a significant impact," on energy cost savings, says Adrian DiCastri, a partner with architectsAlliance.

Building users can self-regulate spaces with manual controls for windows, air diffusers, and lighting. The university gave all occupants instructions on when, for example, to open a window or when to open air diffusers.

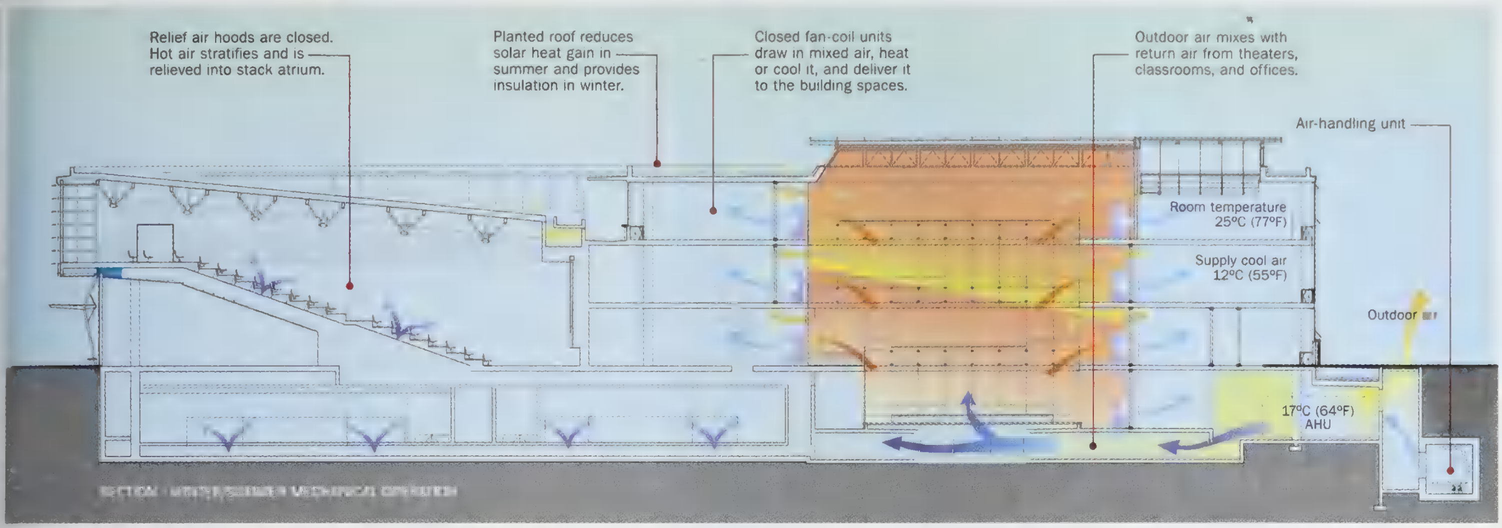
Most of the building's furnishings are covered with a DesignTex fabric developed by William McDonough. The fabric involves a more efficient dyeing process and reduction of wastewater.

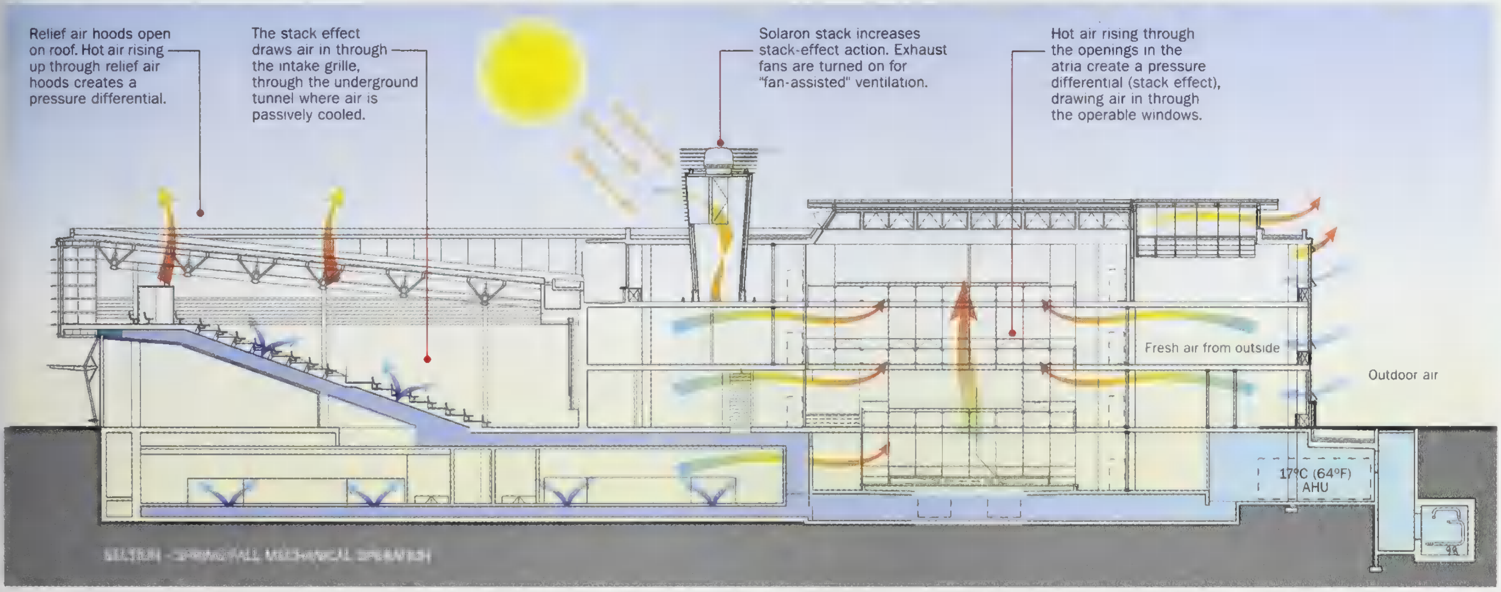
The architects claim that their material selection will save 1,340 tons of greenhouse gas emissions annually, and building systems operations will save 1,125 tons of greenhouse emissions per year. Over a 75-year life span, the building will save 85,715 tons of greenhouse gas emissions. The estimated operating and maintenance costs over 75 years are $33.3 million, as opposed to $83.9 million if the building were conventionally designed. *John E. Czarnecki, Assoc. AIA, with Sara Hart*

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION *This month's Continuing Education Opportunity includes three special building-science sections, on pages 116, 128, and 142. For learning objectives to focus your study while reading these sections, turn to the Projects introduction on page 109. To receive credit, turn to page 147 and follow the instructions. As always, archrecord.com has this story and more continuing education.*

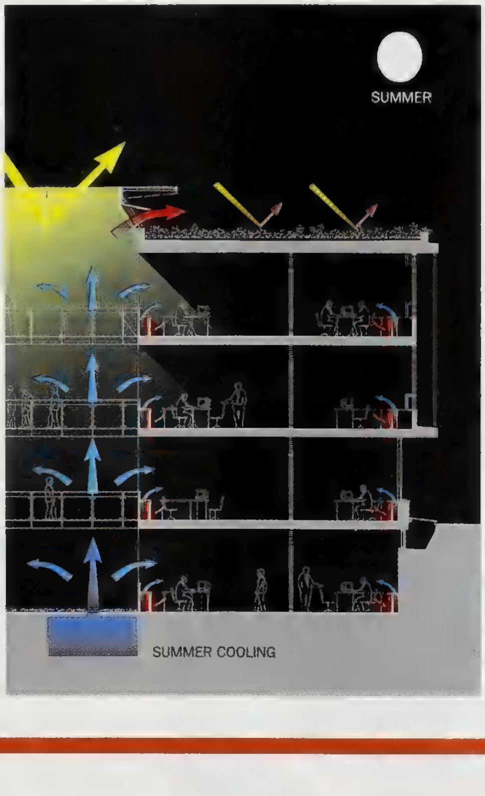


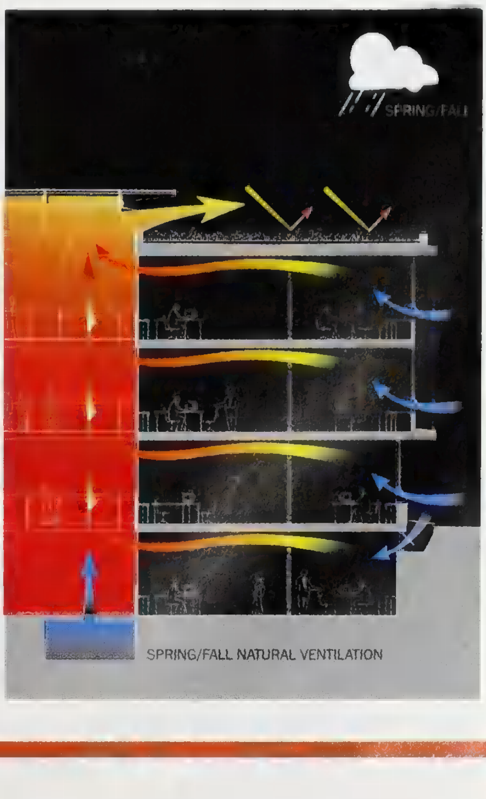
DETAIL SECTION OF AIR STACK


Relief air hoods are closed. Hot air stratifies and is relieved into stack atrium.
Planted roof reduces solar heat gain in summer and provides insulation in winter.
Closed fan-coil units draw in mixed air, heat or cool it, and deliver it to the building spaces.
Outdoor air mixes with return air from theaters, classrooms, and offices.
Air-handling unit
Room temperature 25°C (77°F)
Supply cool air 12°C (55°F)
Outdoor air
17°C (64°F) AHU
SECTION - WINTER/SUMMER MECHANICAL OPERATION

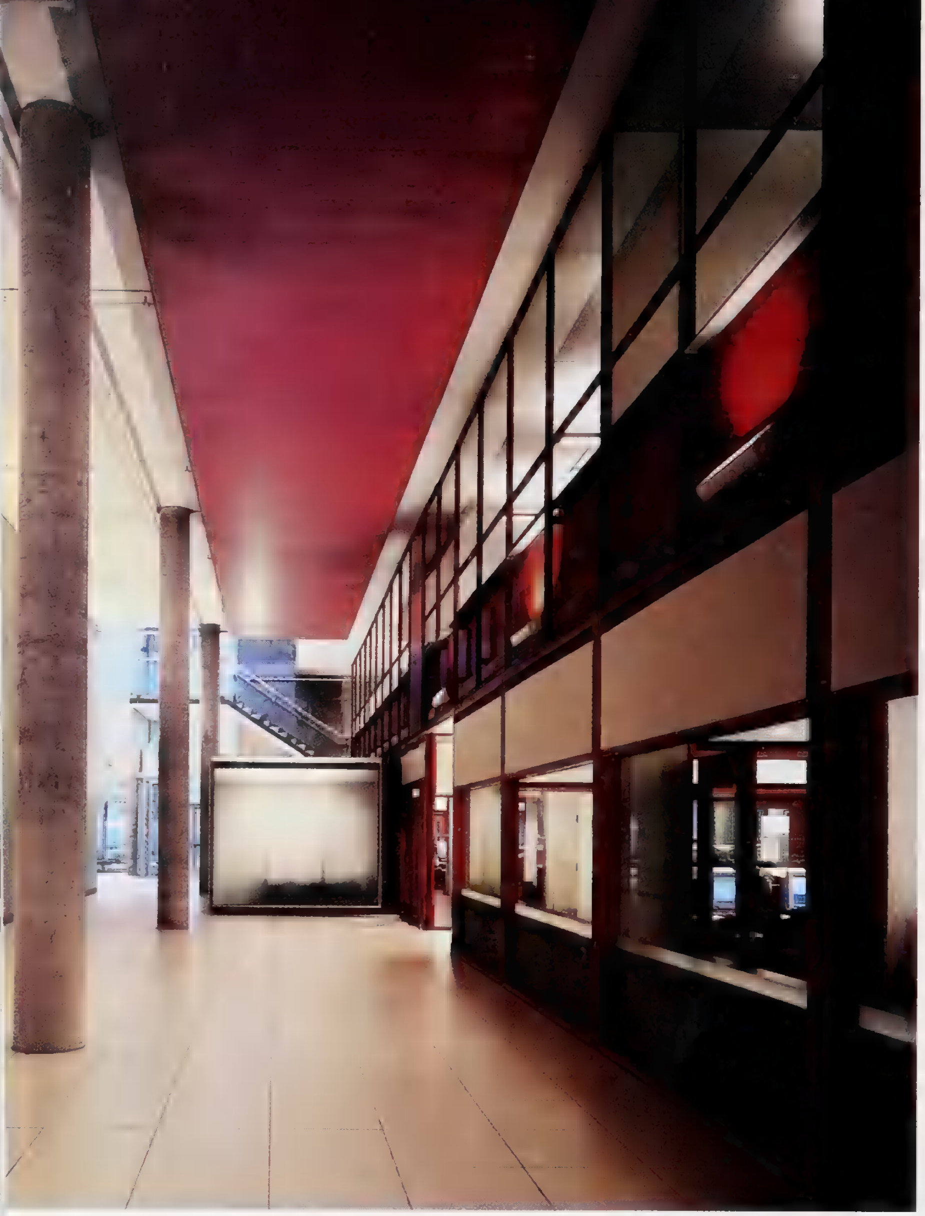

Relief air hoods open on roof. Hot air rising up through relief air hoods creates a pressure differential.
The stack effect draws air in through the intake grille, through the underground tunnel where air is passively cooled.
Solaron stack increases stack-effect action. Exhaust fans are turned on for "fan-assisted" ventilation.
Hot air rising through the openings in the atria create a pressure differential (stack effect), drawing air in through the operable windows.
Fresh air from outside
Outdoor air
17°C (64°F) AHU
SECTION - SPRING/FALL MECHANICAL OPERATION

The inside of air stacks along the west atrium (in picture and diagram, opposite) are lined with a dot matrix pattern for surface reflection and absorption, to maximize daylight penetration. The stacks are topped with exhaust fans that turn on when needed to exhaust warm air. The diagrams to the right show the offices and classrooms adjacent to the courtyard atrium. In summer, cool air is delivered from fan-coil units through diffusers that are individually controlled by room occupants. Cool air is also brought into the atrium from the ground. The planted roof allows for evaporative cooling in summer, absorbing as much heat as a black or gray membrane roof would. In natural ventilation conditions (diagram, far right), cool air enters the rooms through operable windows. Warm air rises and enters the atrium, where it is exhausted through the clerestory. Passively cooled air enters the atrium floor from the underground plenum.

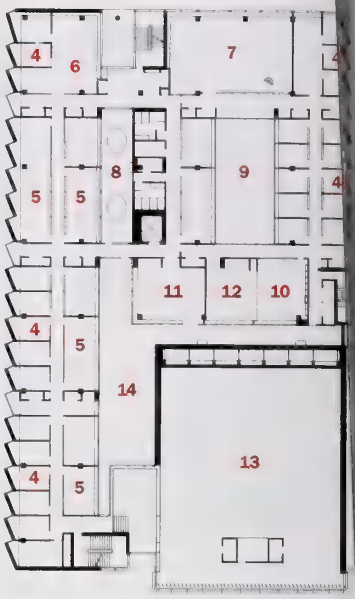




DIAGRAMS: COURTESY THE ARCHITECTS

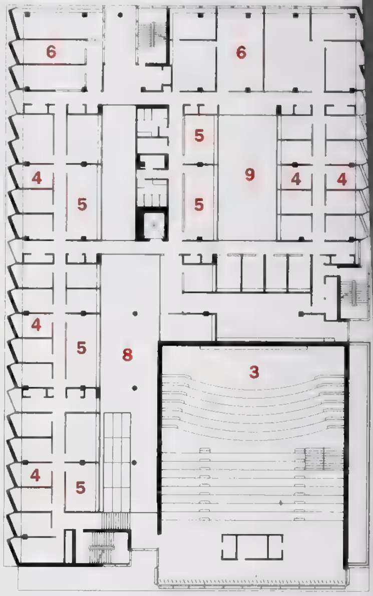


The north-south corridor through the building (left) acts as an atrium. Fabric-covered wood panels in the back of the lecture theater (below) can be opened or closed to emit or block daylight. The main lobby (opposite) slopes down from the campus walk.

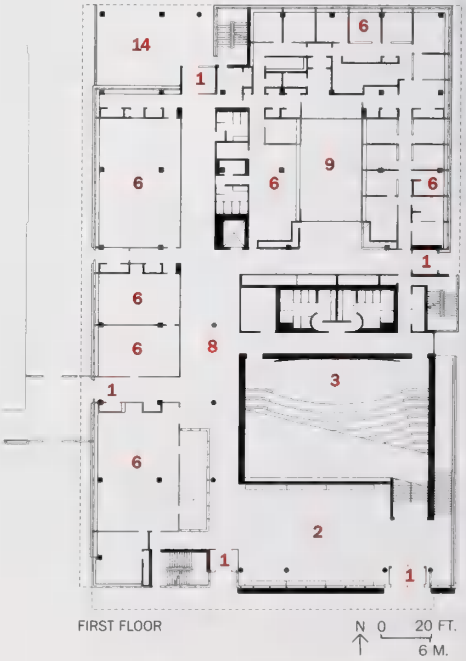


THIRD FLOOR

1. *Entry*
2. *Lobby*
3. *Lecture theater*
4. *Offices*
5. *Grad offices*
6. *Computer labs*
7. *VGR laboratory*
8. *West atrium*
9. *East atrium*
10. *Library*
11. *Faculty lounge*
12. *Seminar room*
13. *Planted roof*
14. *Exterior deck*



SECOND FLOOR



FIRST FLOOR

The building's concrete structure is exposed throughout, and exposed-concrete ceilings (composed of 50 percent fly-ash concrete, which results in lower greenhouse gas emission) provide thermal mass to store heat. Air-conditioning and heating is necessary in a building in this climate, but the smartly designed structure holds heat in winter and allows for ventilation in temperate weather. The building was designed for air to flow through rooms and interstitial spaces—there are no ducts. The heating and cooling loads are far less than they would be in a conventionally designed building, and the mechanical equipment is about half the size necessary for a traditional building of its size. With a lower cost for mechanical equipment, the architects were able, in effect, to focus on considering the entire building as an integrated mechanical system.

Corridors, lined with a cherry-faced plywood with low-VOC toxins, have linoleum flooring, which is renewable and inert. Most of the building's materials, including steel, concrete, and glass, were produced locally in or near Toronto, the center of Canadian manufacturing.

Thinking green from the beginning

What Busby and architectsAlliance have shown with the York building is that it is possible to have an environmentally sustainable building in a climate with dramatic extremes. "We always hear that it is easier to do green in a benign climate," says Peter Busby, principal of Busby + Associates. "But the harsher the climate, the easier it actually is to do a green building. Toronto buildings require three times as much energy as those in Vancouver," so the payback in energy savings in a sustainable building in Toronto, although it definitely requires heating and air-conditioning, is far greater than in a gentler climate.

Planning for sustainability from the beginning of schematic design, according to DiCastri and Busby, is key. And that requires a dramatic change in mindset. "Architects design a conventional building and try to make it green," DiCastri says. "You can't make a building green as an add-on. We say that if you go light or partially green, it will add to the costs. If you go deep green, it will lower the costs."

The true test will be the facility's ability to perform and be flexible. As the copper used in the building slowly patinates and the university's academic needs change, the structure as a whole must also evolve. ■

Sources

Copper cladding: *Heather & Little*

Metal/glass: *Kawneer Company Canada*

Masonry: *Belden Brick Company*

Glass: *AFG Industries; Glass Group*

Skylights: *Prelco*

Metal doors: *Regal Door & Hardware*

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INSTRUCTIONS

- ◆ Read the three special building-science sections, on pages 116, 128, and 142, using the learning objectives provided on page 109.
- ◆ Complete the questions below, then fill in your answers.
- ◆ Fill out and submit the AIA/CES education reporting form or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. How is cool air delivered to the building at York University?
  a. cold air brought in through natural ventilation
  b. cold-water pipes running through concrete slabs
  c. shading overhangs cool the inside air
  d. air from an underground plenum is drawn into rooms

2. Specifying optimal window glazing systems required studying the impact of
  a. daylight routines
  b. weather, daylight routines, and solar radiation
  c. solar radiation and daylight
  d. weather and daylight

3. Environmental comfort is determined by which combination of factors?
  a. temperature, humidity, air intake and exhaust, and solar radiation
  b. air intake and exhaust, humidity, and solar radiation
  c. temperature, humidity, air intake and exhaust, air movement, and solar radiation
  d. temperature, humidity, and solar radiation

4. The process of analyzing, predicting, and controlling the movement of fluids is known as which?
  a. flow engineering
  b. hygroscopic engineering
  c. building management system
  d. variable speed water pumping

5. The goal in the Hannover building was to allow office workers control over which?
  a. placement of windows
  b. choice of shading devices
  c. temperature and air movement
  d. heating, window openings, lighting and shading devices

6. Shading devices should do which?
  a. allow solar heat gain
  b. protect from solar heat gain
  c. block out daylight
  d. reflect daylight to the exterior

7. A sphere has how much less surface area than a cube of the same volume?
  a. 15 percent
  b. 25 percent
  c. 35 percent
  d. 45 percent

8. Potential heat loss from the GLA was reduced by which?
  a. high-performance glazing
  b. highly insulated panels
  c. combination of high-performance glazing and highly insulated panels
  d. combination of high-performance glazing and solar shading

9. The GLA atrium is heated by which method?
  a. hot air
  b. hot water
  c. solar radiation
  d. stack effect

10. The GLA's offices are ventilated by which method?
  a. the air-handling unit
  b. vents in the building facade
  c. operable windows
  d. both a and b, but not c

Program title: **Three special articles, found in the Projects section beginning on page 109, Architectural Record (02/03, pages 116, 128, and 142).**
AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare credit (valid for credit through August 2004).
Directions: Select one answer for each question in the exam and completely circle appropriate letter. A minimum score of 70% is required to earn credit.

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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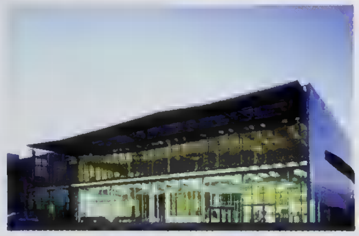
Dresden, Germany

Mostly buried underground, the Saxon State and University Library by Ortner & Ortner brings some old-fashioned ideas to a Modern building.

2.

Nashville, Tennessee

Robert A.M. Stern Architects designed a Neoclassical icon to face Tennessee's 19th-century state capitol and attract citizens downtown.



3.

Troyes, France

A grand porch and bold use of materials and colors give Du Besset-Lyon's Médiathèque an engaging presence in a historic city.

4.

Boston, Massachusetts

Ann Beha Architects created a dialogue between old and new when it converted part of an early-20th-century building into a Modern library.

WWW For additional library projects, and more information on the people and products involved in the following projects, go to Building Type Study at **architecturalrecord.com**.

PHOTOGRAPHY: © STEFAN MULLER (1),

By Clifford A. Pearson

Go to a flea market anywhere they're building new libraries and chances are you'll find some old card catalogs for sale. Digital technologies have made the great wooden cabinets with all their index cards obsolete. But libraries made of bricks and mortar (or glass and steel) are not disappearing, even though much of the information they house can now be accessed online or by other remote means. Their roles and functions, however, are changing.

More than ever, libraries are social hubs and places of learning. Although people can search catalogs and read periodicals from their computers at home, they need to visit the library to have real conversations, to bump into colleagues, to catch the buzz that only a physical hive of activity can engender. "Libraries are no longer just repositories of information," says Shirley Dugdale, the head of learning environments consultancy services at the planning and design firm DEGW. "People go to libraries these days for help in finding information and to collaborate with others," explains Dugdale. One of the design challenges for architects is finding the right balance between spaces for interaction and sanctuaries for reading.

Public libraries are increasingly important in providing access to computers and online services for people who don't have such technologies at home or work, says Dugdale. They are also becoming places where more affluent people can come, plug in, and get help in mining the often confusing information landscape. While libraries have long provided communities with reading rooms, today they often have extensive facilities for classes and even conferences. Libraries are also supplying spaces for other kinds of gatherings: cafés for informal encounters, "newsstands" for people to catch up on the latest periodicals, and galleries for exhibitions. In part, these are responses to a new type of library competitor—the comfortable, sprawling stores of book chains such as Barnes & Noble and Borders. The changes seem to be working: Library visits rose 8.3 percent in 2002 over 2001, according to a study by the American Library Association.

Both public and private clients are reasserting the civic role of libraries. Cities such as Nashville and Troyes, France, have built major facilities right downtown, using them to make architectural statements about the central role of learning in a modern society. In Dresden, Germany, a new library brings together the collections of the state government and a local university and creates a public square serving town and gown. And in Boston, the Christian Science church literally tore down walls separating its new Mary Baker Eddy Library and the city's street life. Although these projects employ different architectural styles, they all strive to express a vigorous engagement with the public realm. ■

Saxon State Library
Dresden, Germany

1

ORTNER & ORTNER BRINGS BACK A NEOCLASSICAL FORMALITY TO LIBRARY DESIGN WHILE LEAVENING IT WITH A MODERN SENSIBILITY.

By David Cohn

Architect: *Ortner & Ortner Baukunst—Laurids Ortner, Manfred Ortner, principals; Christian Lichtenwagner, Ekkehart Krainer, Ulrich Wedel, Rudi Finsterwalder, Michael Ewerhart, Michael Adlkofer, Hans Witschurke, Roland Duda, Robert Westphal, Michael Franke, Berit Grosmann, Bernhard Eichinger, Thomas Grossmann, Thomas Heydenreich, Georgia Prätorius, Ralf Prätorius, project team*
Architect (planning): *ATP Achammer-Tritthart & Partner—Burkhard Junker, chief executive officer*
Client: *State of Saxony, represented by the State Construction Department—Matthias van Rüdiger, managing director of construction*
Landscape architect: *Burger + Tischer*
Engineers: *Gmeiner Haferl Tragwerksplanung KEG (structural); Zibell Willner & Partner (building planning)*
Main contractor: *Bilfinger + Berger*

Size: *485,000 square feet*
Cost: *$80 million*

Sources
Stone facade: *Lauster Steinbau*
Glass roof: *MBM Metallbau*
Wood panels: *Inabau Tischlerei*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

For more than two decades the prevailing model for library design in Germany has been Hans Scharoun's State Library in Berlin. Breaking with the tradition of organizing large libraries around a central reading room, Scharoun introduced a nonhierarchical mix of reading areas and book stacks, which he set on floating floor trays much like the projecting balconies of his nearby Philharmonic Hall. With the new Saxon State and University Library in Dresden, architects Laurids Ortner, 62, and his brother Manfred, 60, have made a radical break of their own. They have reintroduced the monumental reading room and used it to provide a focus for the 400,000 square feet of open book stacks and study areas in this mostly underground facility.

Program

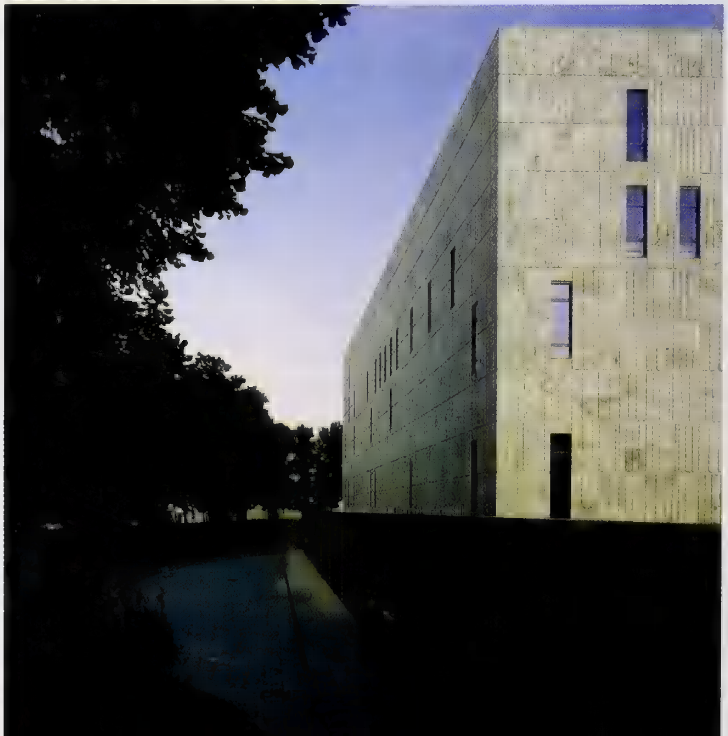
The building combines the official collections of the Saxon State with the general library of Dresden's Technical University, providing space for 7 million volumes. Its site, once the university's soccer field, is ringed by mature trees and earth berms originally built for spectator seating. Set in a developing area at one edge of the campus, the library will be joined by new academic buildings.

Solution

The Ortners' design, which won an open competition in 1996, plays back and forth between Neoclassical formality and the more informal and practical approach of contemporary buildings. This dichotomy highlights the two origins of the library: the Saxon royal collections and the public university's holdings.

"Our first idea was to put the library underground," says Manfred Ortner. "It was the only way to maintain the aura of this location, which was given by the surrounding trees." This approach also allowed the architects to create a large public square for the growing campus. The library occupies three levels below the square, which is set at the height of the earth berms. The architects framed the square at the front and back with a pair of administrative blocks clad in Türing stone, a honey-colored German travertine. Covered in sod and crisscrossed by paths, the square is punctured by skylights, ventilation pods, and emergency egress hatches to the library below.

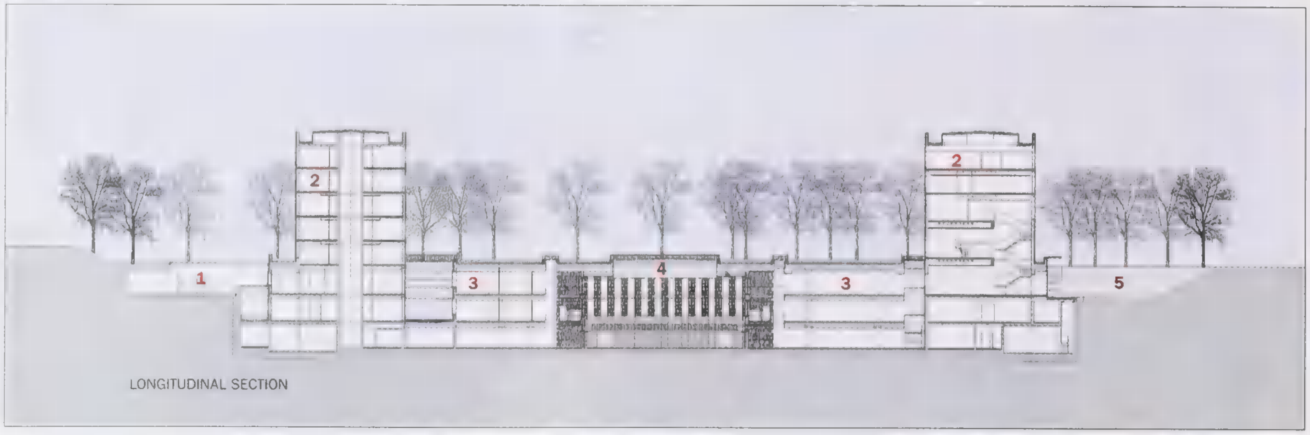
In contrast to the uneasy, artificial naturalism of this too-often punctured lawn, the library's main entry portico presents a row of black precast-concrete columns that evokes the Neoclassical grandeur of Schinkel's Altes Museum in Berlin. The portico, which is partially hidden from the street by the site's berms, reveals itself through a small off-center opening, seeming to emerge



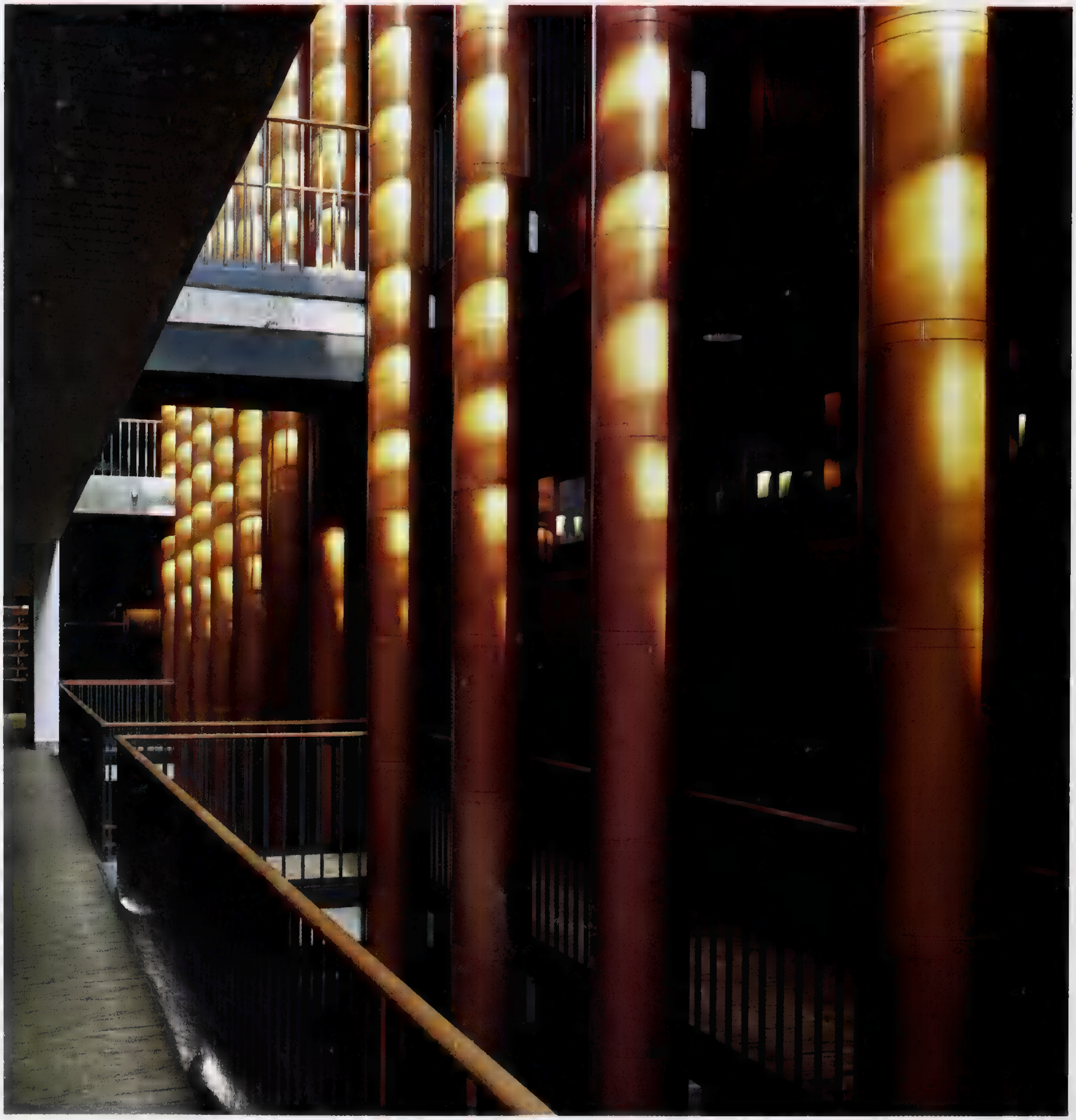
PHOTOGRAPHY: © STEFAN MÜLLER

David Cohn is RECORD*'s Madrid-based correspondent.*

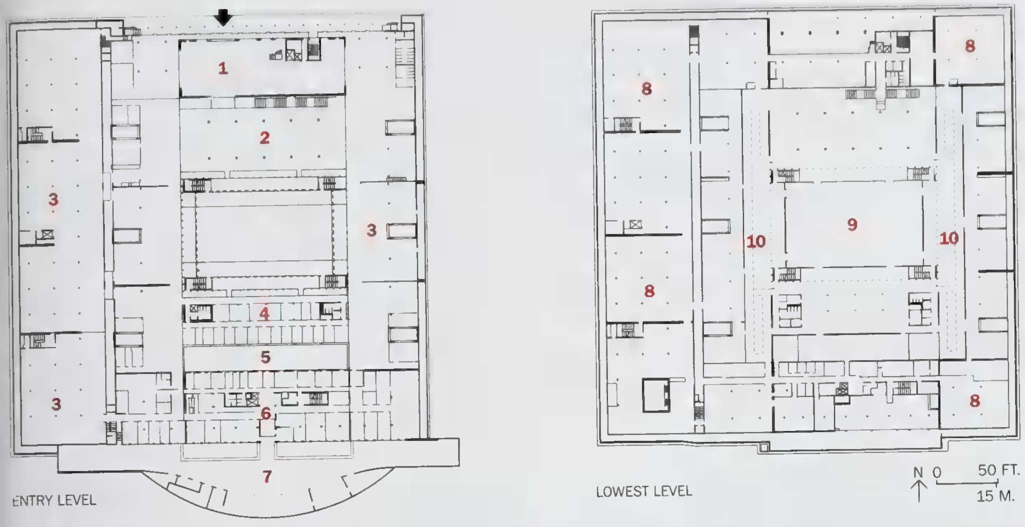
The two above-ground blocks define a public square for a growing university campus (right). The buildings are clad in Türing stone, a German travertine (below).



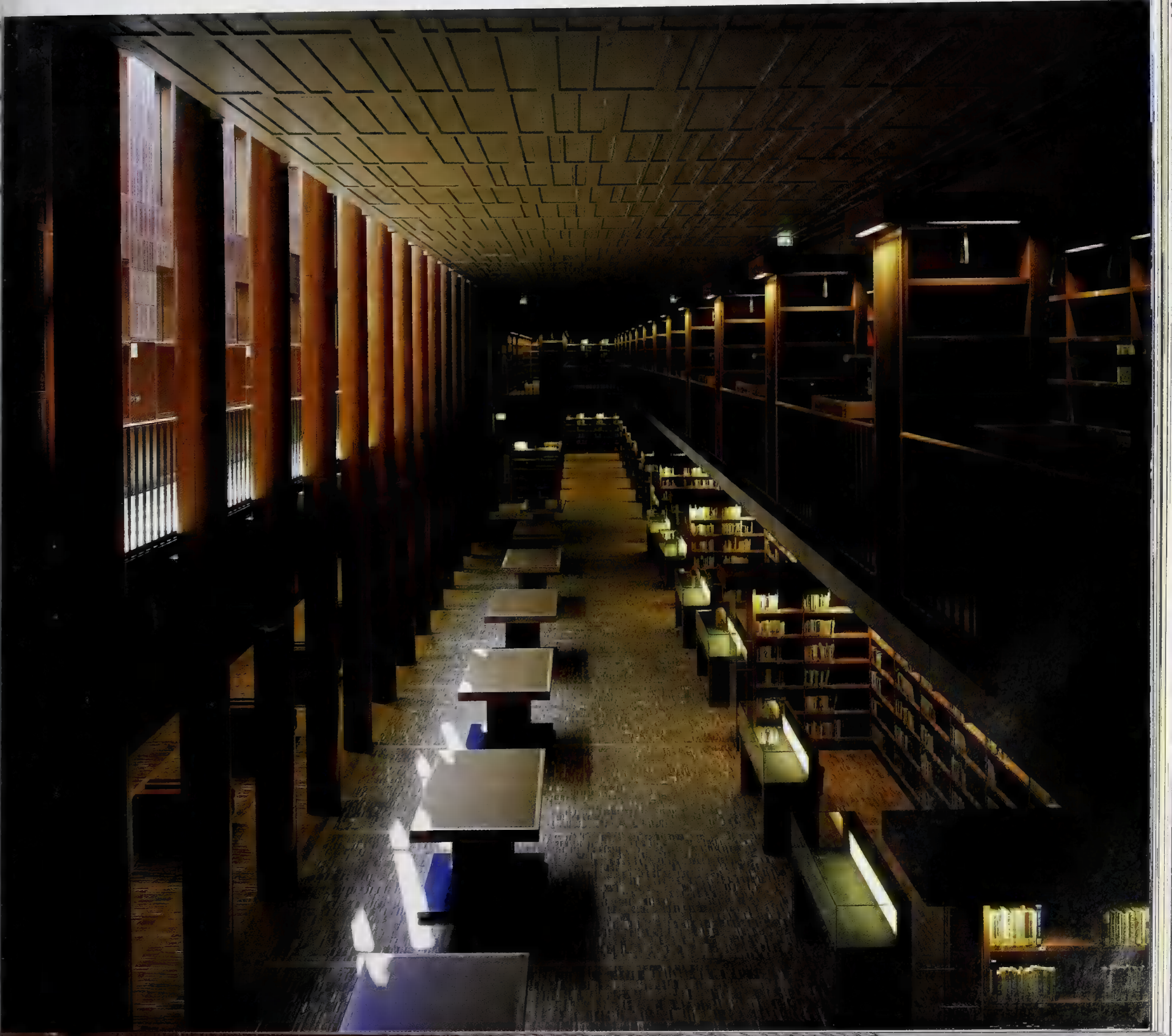
1. *Entry*
2. *Administratior*
3. *Reading/stacks*
4. *Main reading r m*
5. *Loading*

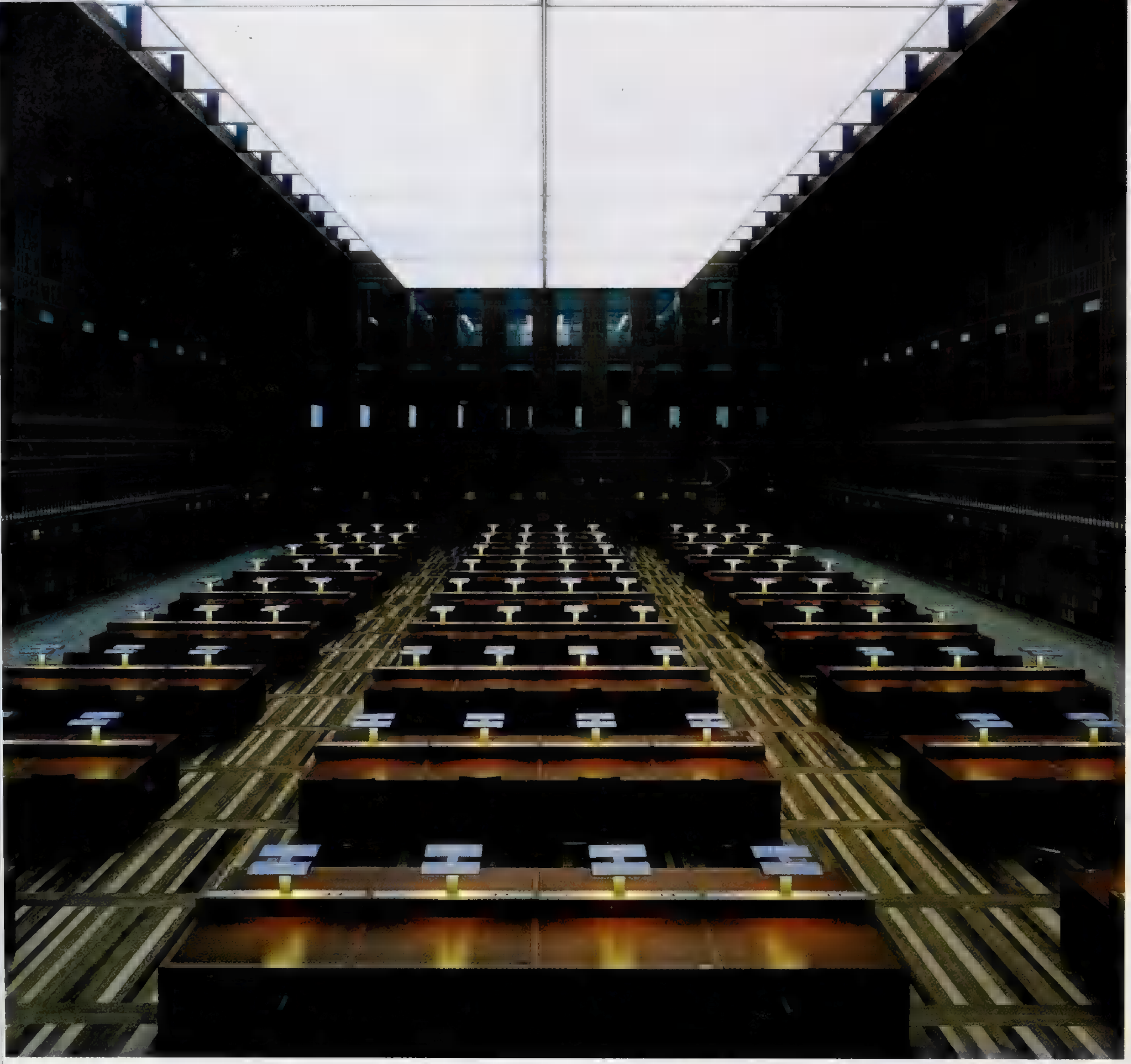


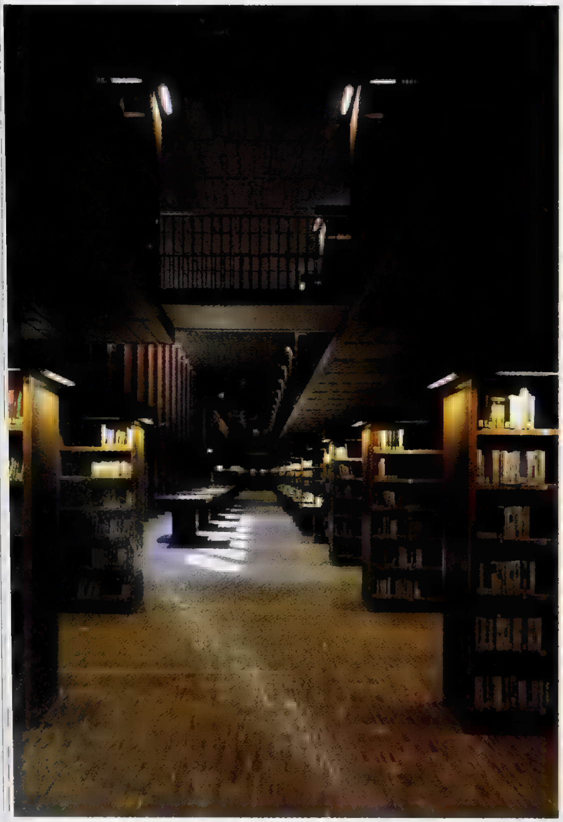
Much of the library i buried beneath the landscaped public square, helping to pr vide a stable interior environment for the book collections (sec tion, above). Imposin precast-concrete columns add to the building's sense of formality (left), while numerous skylights bring daylight into the major reading and study areas (opposite



1. *Lobby*
2. *Catalogs*
3. *Reading/stacks*
4. *Seminar rooms*
5. *Light well*
6. *Offices*
7. *Loading*
8. *Archive*
9. *Main reading room*
10. *Double-height galleries*







from the earth like a picturesque English garden grotto.

The stately reading room lies at the heart of the building and rises from the lowest level to a skylit ceiling. Surrounded by open floors, it is enclosed by bookshelves and paneling of stained wood and fiberboard. "A classic reading room has the scale and power to focus readers' attention," says Manfred Ortner. "You can feel the power of the whole library concentrated here."

Mediating between this grandeur and the surrounding floors is a series of double-height, skylit circulation galleries, which are sometimes staggered between the three floors in a lively section of Piranesian complexity. The reading room is ringed by these cuts and a double-height row of wood columns.

Interior finishes search for a balance between economy and dignity. The warmth of wood mixes with the honesty of untreated concrete columns and exposed ductwork. Carpeting is ingeniously printed with a pattern scanned from a sample of Türing stone. The Ortners also apply a "bar code" pattern—a shallow relief of boxes in irregular configurations—to the building's stone cladding, as well as to the wood paneling and coffered concrete ceilings inside.

Commentary

With the Saxon State Library, the Ortner brothers have come a long way from their 1960s roots as part of a group of radical artists and architects called Haus-Rucker-Co. While they currently share with other architects of their generation a fashionable nostalgia for the Neoclassical, their work is far from the stilted orderliness favored by many of their Berlin peers. The underlying modesty of the Saxon library, as seen in its retiring urban presence, is a necessary antidote to more bombastic features like the grand entry portico. Just as Scharoun conceived the open-plan floors of his State Library in Berlin to represent West Germany's postwar spirit of democracy, so the Ortners' mix of the Neoclassical and the suburban offers a suggestive image of a new Germany in the making. ■

As in the great Beaux-Arts libraries of the 19th century, the main reading room (opposite, top) serves as the focal point of the entire design. But the Ortner brothers surrounded this room with open-plan reading areas (opposite, bottom left) and used modern elements such as raw concrete and sculptural stairs (this page and opposite, bottom right).

Nashville Public Library
Nashville, Tennessee

2

ROBERT A.M. STERN ARCHITECTS BROUGHT HARD-NOSED PROBLEM-SOLVING SKILLS AS WELL AS NEOCLASSICISM TO A COMPETITION-WINNING DESIGN.

By Christine Kreyling

Architect: *Robert A.M. Stern Architects—Robert A.M. Stern, FAIA, Alexander Lamis, AIA, partners; Jeffery Povero, AIA, Paul Zembsch, project designers; Daniel Lobitz, AIA, Melissa DelVecchio, Mark Gage, Ryan Hullinger, Julie Nymann, Jong-Hyuck Park, Charles Toothill, Susi Yu, assistants; Dawn Handler, Laura Hynes, Mei Wu, landscape team; Thu Do, Kelly Greeson, Pat Burns Ross, interiors team*
Architect of record: *Hart Freeland Roberts*
Client: *Public Library of Nashville and Davidson County*
Engineers: *Hart Freeland Roberts (structural); I.C. Thomasson Associates (m/e/p)*
Consultants: *Allan Ray Associates, Ben Page and Associates (landscape); Fisher Marantz Stone (lighting); Shen Milsom & Wilke (acoustical)*
General contractor: *Beers/Jones & Jones*

Size: *350,000 square feet*
Cost: *$51 million*

Sources
Steel windows: *Hopes*
Glazing: *Viracon*
Skylights: *Naturay Skylights*
Special interior surfacing: *Forbo Marmoleum; Tennessee Marble; Surell*
Lobby flooring: *Georgia Marble*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

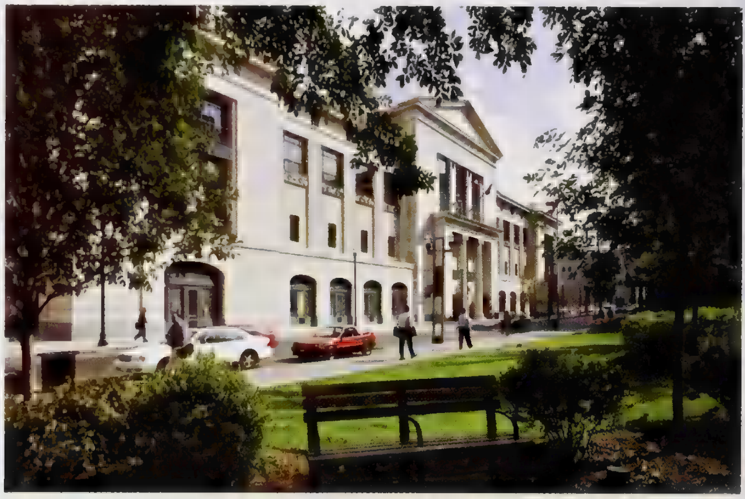
Downtown Nashville once had a Classical library building. The 1904 edifice, constructed with a donation from industrialist Andrew Carnegie, was demolished in 1963 to make way for a main library in the Modernist mode. Fragments of the old structure were placed in a plaza next to the new library, where they lay like bleached bones alongside the Santa Fe Trail—critters that failed to go the distance.

In 2001, Nashville got a new main library that reincarnates the Classical spirit of the lost Carnegie building. And the current facility, designed by Robert A.M. Stern Associates and the local firm Hart Freeland Roberts, is proving to be the most popular architecture in town, as six decades ago the Ryman Auditorium became the mother church of country music there.

Program

The library commission, which Stern won in a competition with two other finalists—Michael Graves and Hardy Holzman Pfieffer—envisioned a building with 288,000 square feet of space (four times the size of the existing facility) and a construction budget of $50–$55 million.

The program, developed by project manager Heery International for a user group wary of winding up with a stylish but dysfunctional plant, was purposely specific. The full-block site was difficult—with a steep slope and a parking garage that had to be preserved. The immediate context was architecturally mediocre and fractured by surface parking, but it had the virtue of a direct sight line to the Tennessee State Capitol three blocks away.



PHOTOGRAPHY: © PETER AARON/ESTO

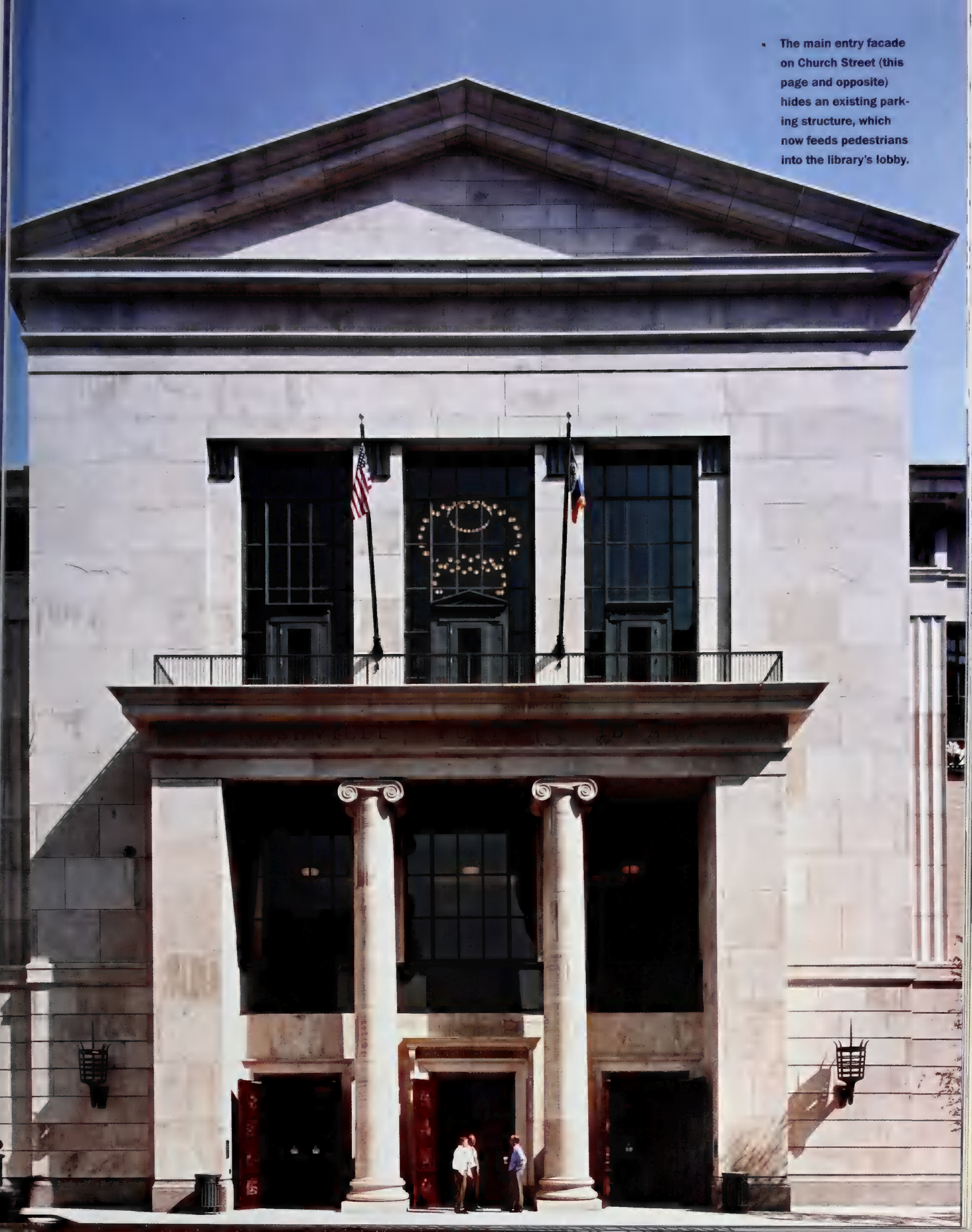
Solution

Stern's victorious design acknowledged that the capitol is the only architecture in the vicinity worth the library patron's attention. The major public spaces—lobby, Nashville Room for special collections, and Grand Reading Room—all focus on views of William Strickland's Greek Revival masterwork. More informal seating areas turn inward toward an open-air courtyard. And in its uncompromisingly Classical organization, massing, and detailing, the library recognizes the capitol's stature. "Classicism seemed appropriate to reinforce Nashville's history as the 'Athens of the South,' " Stern says, "to strengthen something that's latent."

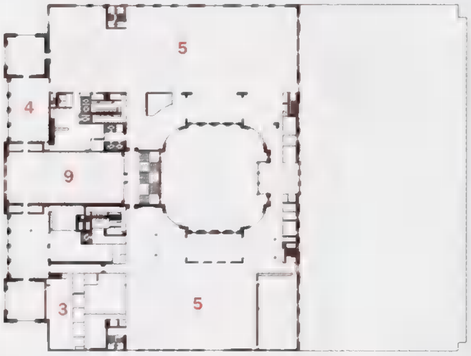
By building a three-story, pedimented limestone front on Church Street, the architects were able to place two large floors over the existing parking structure. They also inserted an intimate Italianate courtyard in the center of the plan on the second floor.

The interior is an exercise in logical progression. The ground floor lobby houses circulation services, with a balcony functioning as exhibition and music gallery. Library director Donna Nicely says the self-contained lobby and balcony "encourage us to program events there—the noise doesn't leak into other areas." Surrounding the lobby are spaces requiring the most immediate public

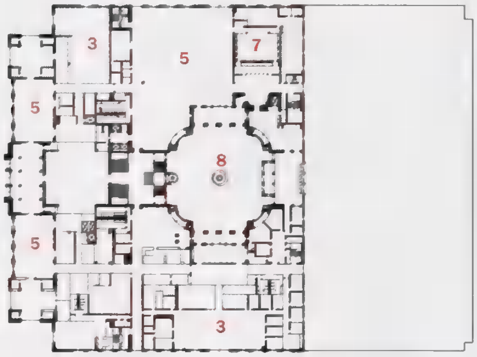
Christine Kreyling is architecture critic for the Nashville Scene.



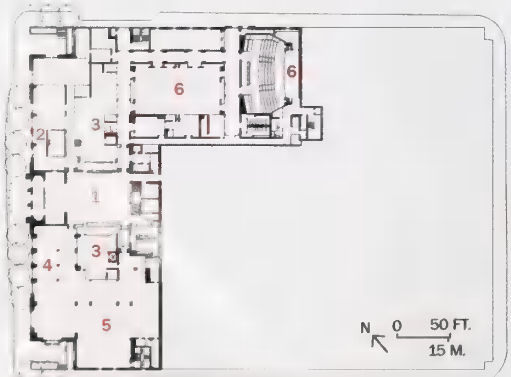
- The main entry facade on Church Street (this page and opposite) hides an existing parking structure, which now feeds pedestrians into the library's lobby.



THIRD FLOOR



SECOND FLOOR



GROUND FLOOR

The main entry (above) and key interior spaces, such as the main reading room (opposite, bottom), face the state capitol, while lesser reading areas (opposite, top right) face a courtyard built on top of the garage. Murals in the stair hall (right) were painted by Richard Haas, while EverGreene Studios did the decorative painting in other areas. The main lobby and its surrounding balcony (opposite, top left) can be used for special events.

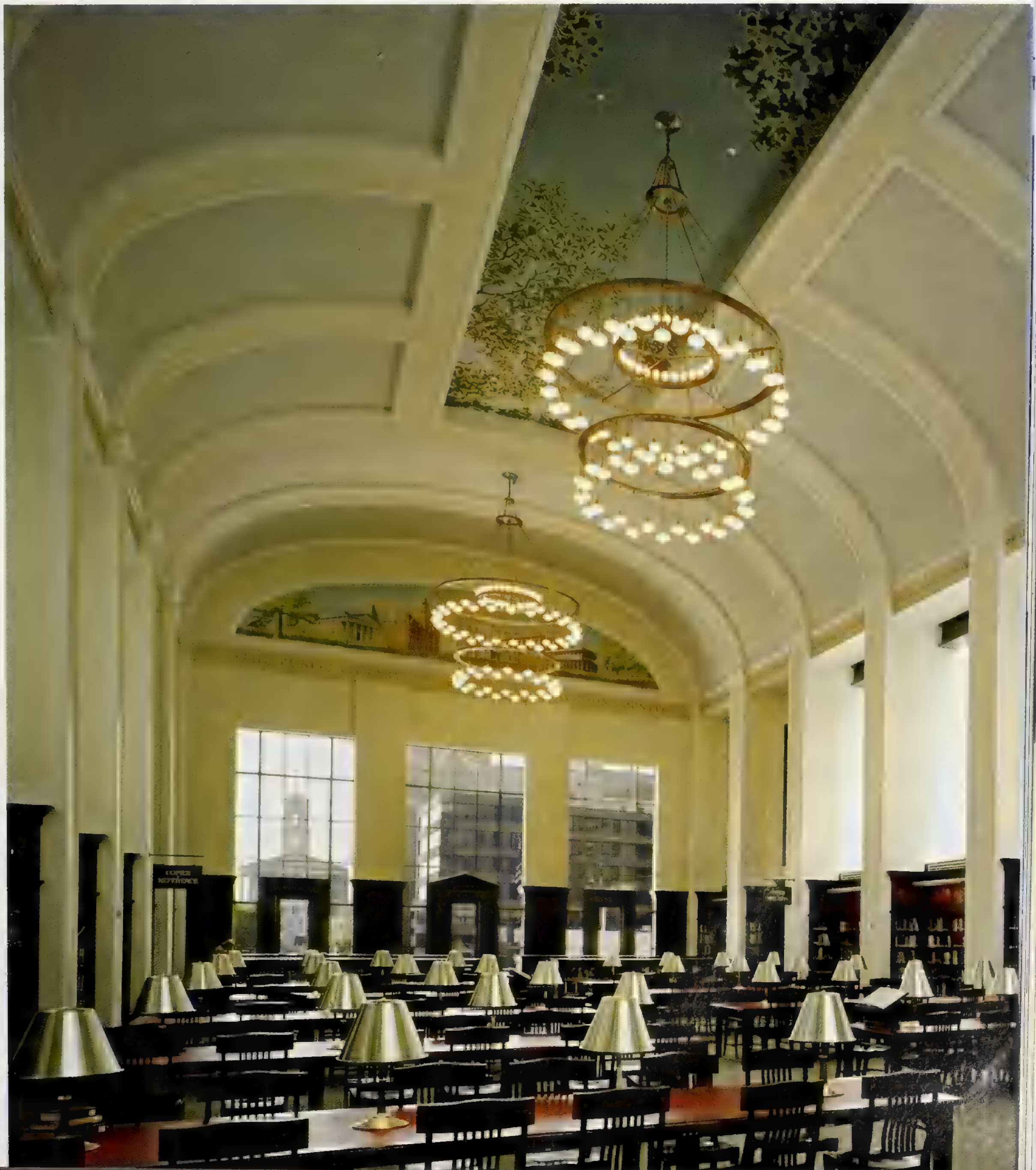
1. *Lobby*
2. *Retail*
3. *Offices*
4. *Reading*
5. *Stacks*
6. *Conference center*
7. *Children's theater*
8. *Courtyard*
9. *Grand reading room*

access: a "storefront" for popular materials, a streetside café and retail space, and a conference center adjacent to the garage. Stern notes that "the entrance from the garage is not into some nasty space but right into the lobby, which encourages people to cut through to the street, and maybe pick up a book in the process."

A double staircase leads up to the children's section, special collections, and offices. The top floor, with its barrel-vaulted main reading room, is reserved for serious study and research. The plan allows activity to circulate around the courtyard and minimizes a patron's need to trek through one division in search of another. Design competition juror Marlene Davis, dean of the University of Tennessee's College of Architecture, describes Stern's planning as "a programmatic tour de force. He worked out every little detail."

Commentary

Stern's library was part of an ambitious $115 million building program that also included five new branch libraries and the renovation of three existing ones. Director Nicely is pleased that "patronage at the main library is four times what it was in the former library. The public loves this building. What they like most is that it feels so warm, so welcoming; it doesn't intimidate. I think we struck a chord in the city." A Classical chord. ■



Troyes Médiathèque

Troyes, France

3

DU BESSET-LYON WRAPPED A HISTORIC COLLECTION OF BOOKS IN GLASS AND GOLD, CREATING A MODERN JEWEL BOX FOR THE CIVIC REALM.

By Claire Downey

Architect: *Du Besset-Lyon Architectes—Pierre du Besset, Dominique Lyon, principals; Alain Chiffoleau, Gary Glaser, Lawrence Weiner, project team*
Client: *Communauté d'Agglommération Troyenne*
Engineers: *Khephren Ingénierie (structural); Alto Ingénierie (m/e/p); Van Santen (facades)*
Consultants: *Speeg & Michel (lighting); Jean-Paul Lamoureux (acoustical); Casso (security)*

Size: *116,000 square feet*
Cost: *$12 million*

Sources
Masonry and foundations: *CRN*
Metal structure: *ACMM*
Curtain wall: *Laubeuf*
Gold suspended ceiling: *Richter System*
Metalwork: *Vulcain*
Woodwork: *Santin*
Elevators: *Otis*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

The French Revolution toppled the monarchy, but it also attacked another rich and powerful institution—the Church. In 1789, the revolutionary authorities gathered thousands of rare books and manuscripts, mainly from religious libraries, and assembled them in one collection in the city of Troyes. But the collection never had its own building until July 2002, when the Troyes Médiathèque opened its doors.

Program

Troyes is a city with an industrial past, rich in medieval architecture, and with a growing university population. For the Médiathèque, the municipality wanted a welcoming environment that would attract a diverse group of users. To do this, it applied new technologies to old sources, such as scanning 12th-century manuscripts to make them available as digital files. It also instituted an open-shelf policy for contemporary books and allowed people to take some titles out of the building (which is not the norm at French libraries).

When they won the design competition in 1997, architects Du Besset and Lyon were already known for a library they had designed in Orléans, as well as the headquarters for *Le Monde* in Paris. The Troyes project is part of a new development zone, on the site of what had been an old train station and, later, a high school. Today, the existing building is being turned into a cultural center, with the library abutting it on one side.

The library provides space for the rare-book collection, exhibitions, reading rooms, a newspaper kiosk, and closed areas for book conservation, storage, and offices.

Solution

Because the library has only three visible facades and suffers from a main entrance located off the parking lot of a McDonalds restaurant, the architects chose to create a building that is largely transparent, where interiors and exteriors flow together.

Beyond the glass facade, a series of bold elements—including a gold ceiling, a pink staircase, a historic book room, and a yellow corridor—define an interior urban landscape. At the heart of this cultural village is a dramatically elongated rare-book room where volumes are displayed on wooden shelves dating to the 17th century.

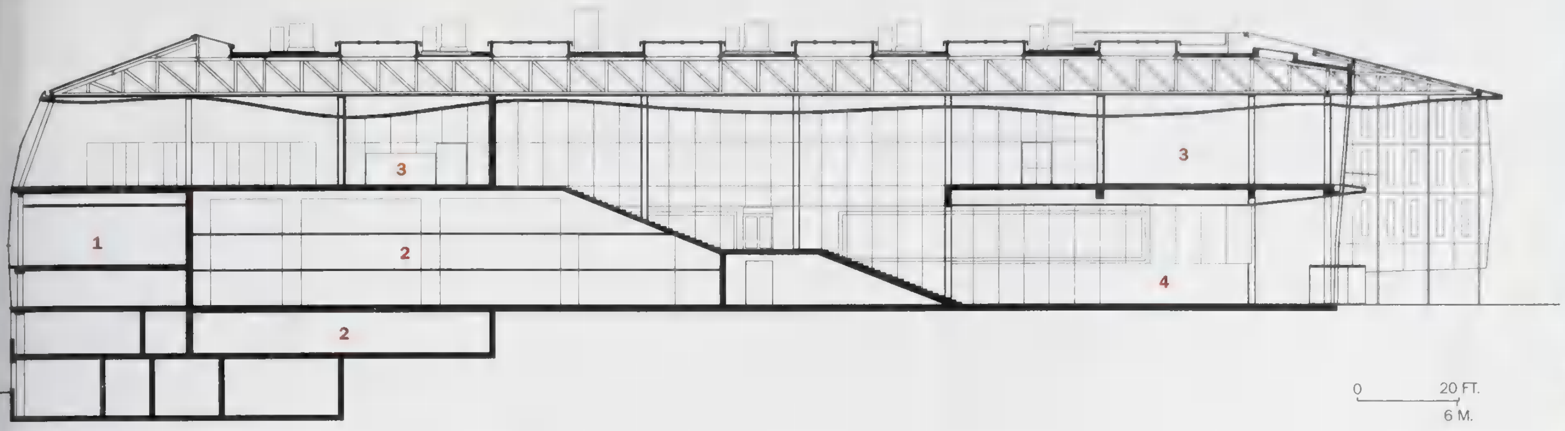
Glazed corridors and open-stack areas wrap around the old book collection, with expansive glass walls that encourage people to push open doors and explore new works. The architects employed a palette of pastel colors to define spaces, even extending the concept to window walls where colored film is sandwiched between glass layers.

Surrounded by glass, the main

Claire Downey is RECORD*'s Paris-based correspondent.*

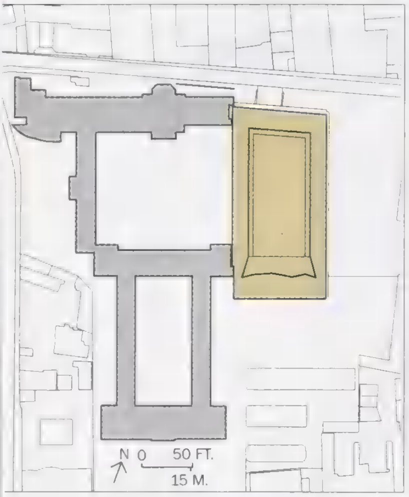
A glass front and deep portico help project the interior spaces out to the exterior. Part of this strategy includes continuing the undulating gold ceiling of the top floor on the underside of the roof to form a canopy, a feature that is currently being completed.

PHOTOGRAPHY: © PHILLIPE RUAULT, EXCEPT AS NOTED

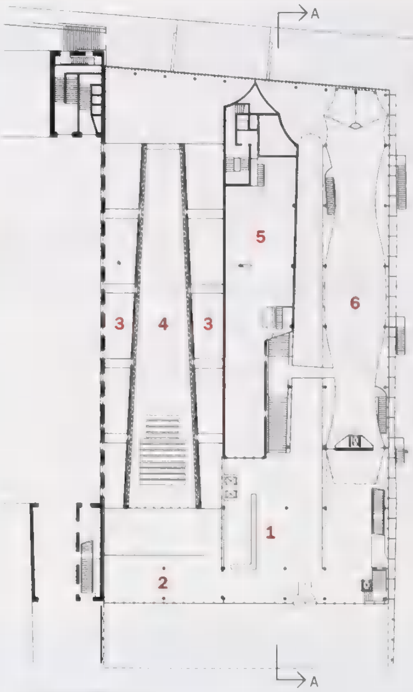


SECTION A-A

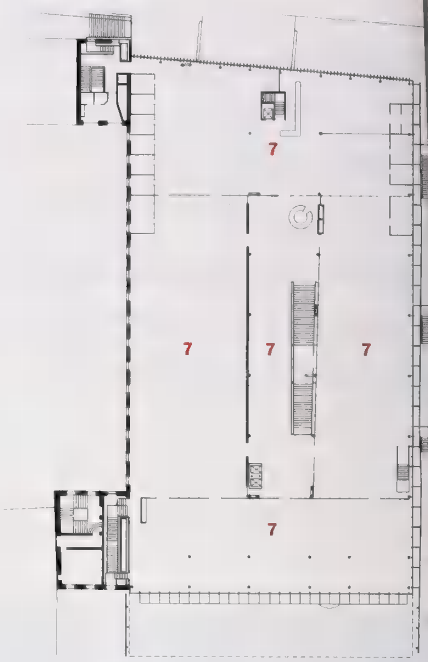
1. *Permanent exhibits*
2. *Storage*
3. *Reading*
4. *Children's section*



1. *Lobby*
2. *Newsstand*
3. *Permanent exhibits*
4. *Rare books*
5. *Storage*
6. *Children's section*
7. *Reading*

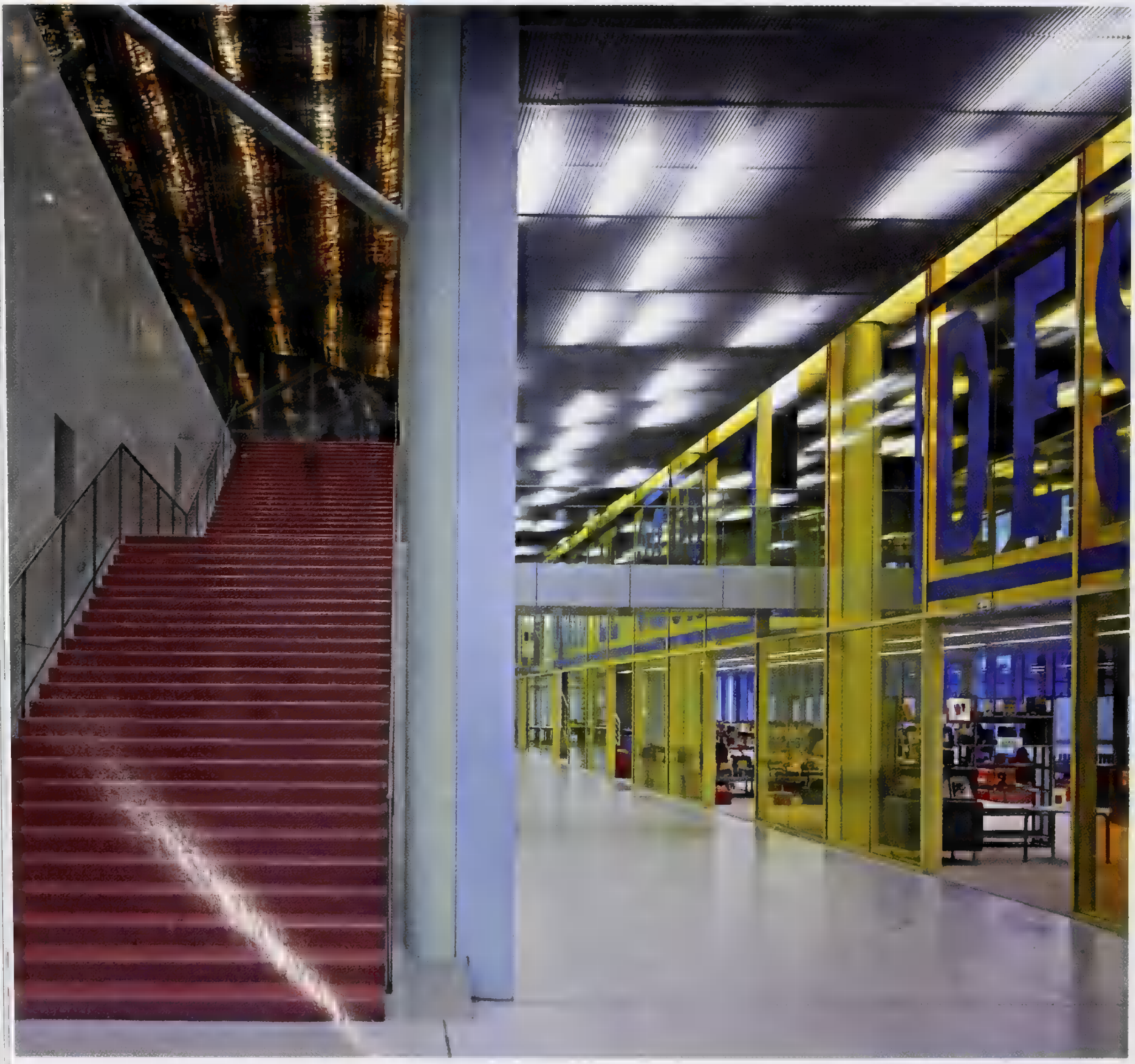


GROUND FLOOR



SECOND FLOOR

The library abuts an old train station that is being converted into a cultural center (site plan, above). The phrase “Ecrit dans le coeur des objects” (“Written in the heart of objects”) runs along a main corridor (below).

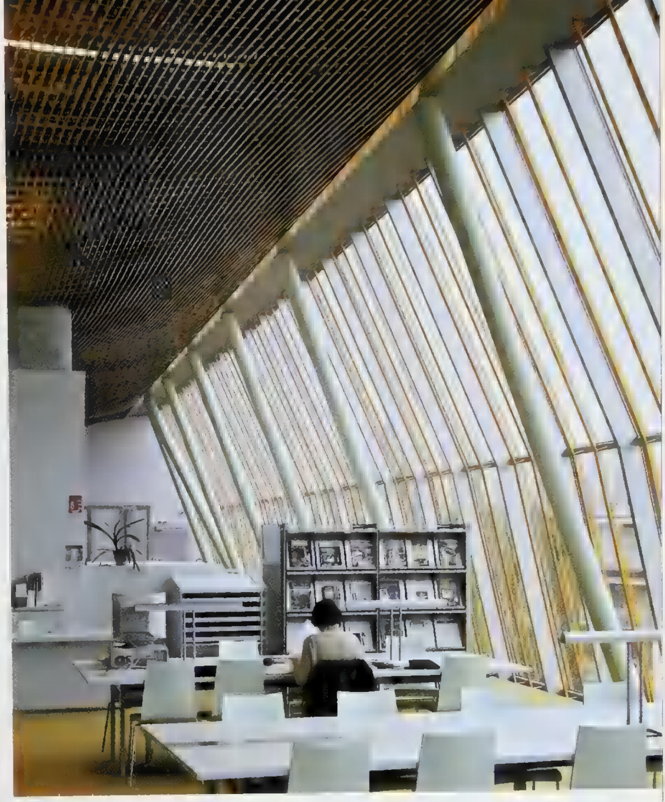


reading room on the top floor offers views of the city and the moody, often gray, sky. An undulating gold ceiling grid floating above the floor casts a warm light over stacks and reading areas and evokes metaphors of the region's champagne industry. Made of gold-anodized aluminum, it is more crumpled than curved in places, adding to its reflectivity. Looking up, visitors can see through the grille to the lights above and through a glass roof to the sky beyond. The architects designed the building so the gold ceiling would project out under the roof to form a canopy over the entry, an element that is just now being completed.

Commentary

Du Besset and Lyon have shown themselves to be experts at designing spaces that create a certain lightness of being. At Troyes they balanced the intimacy that pastel colors can impart with a dynamic energy generated by long, open volumes. The result is a place where visitors feel comfortable either studying for hours or just dropping by to see a changing exhibition. What the library needs now is an entry sequence that doesn't require sidestepping a drive-thru lane at McDonalds. ■

PHOTOGRAPHY: © PAUL RAFTERY/VIEW (THIS PAGE AND



The rare-books room (above left) includes old shelves, while reading and study areas elsewhere in the library are thoroughly modern (above right). Visitors can look through the gold ceiling and glass roof to the sky (below).

Mary Baker Eddy Library

Boston, Massachusetts

4

ANN BEHA ARCHITECTS INSERTED A MODERN LIBRARY WITHIN A NEOCLASSICAL BUILDING, RESPECTING THE OLD BY MAKING CLEAR WHAT'S NEW.

By Nancy Levinson

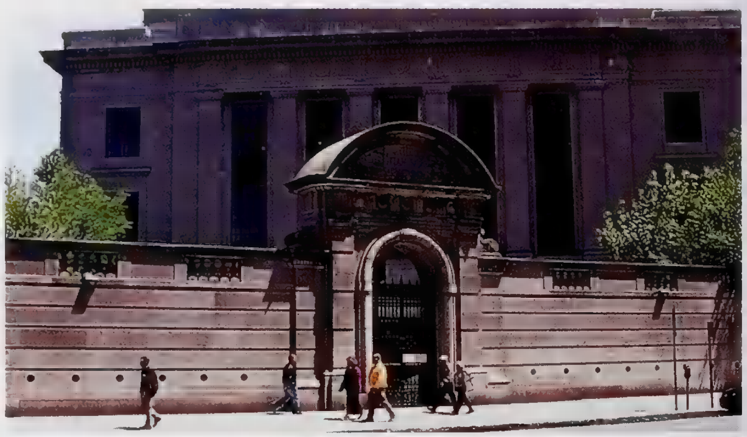
Architect: *Ann Beha Architects—Ann Beha, FAIA, Peter Sugar, AIA, principals; Peter Hoyt, AIA, Chris Raber, Cynthia Deschenes, James Selvitelli, Chantelle Brewer, Milton Lau, Jill Bogdanowicz-Wilson, design team; Jonathan Cutler, AIA, John Paul Dunn, master planning; Ken Guditz, AIA, Ric Panciera, AIA, Geoff Pingree, envelope*
Client: *Mary Baker Eddy Library for the Betterment of Humanity*
Consultants: *Reed Hilderbrand Associates (landscape); Schuler & Shook (lighting)*
Engineers: *Weidlinger Associates, Simpson Gumpertz & Heger (structural); Vanasse Hangen Brustlin (civil); AHA Consulting Engineers (mechanical/electrical)*
General contractor: *Shawmut Design and Construction*

Size: *81,000 square feet*
Cost: *$25 million*

Sources
Glass curtain wall: *Old Castle Temp Glass (Stackwall System)*
Brushed stainless-steel canopy: *Hercules Steel*
Swinging doors and enclosure: *Salem Glass*
Office furniture: *Herman Miller; Knoll*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Bostonians have never shied away from the challenge of the good cause or the high ideal, and it is no surprise that the city that styles itself the "Athens of America" should boast an abundance of institutions dedicated to the pursuit of knowledge. The latest such institution, which opened this past fall, is the Mary Baker Eddy Library for the Betterment of Humanity. Designed by Ann Beha Architects, the library has, as its formidable name would suggest, a capacious agenda. It is at once a research institution housing the collections of Mary Baker Eddy, the founder of the Church of Christ, Scientist, and a civic gathering place, featuring exhibitions whose theme is the power of ideas.



Program

As conceived by the client, the program for the library mixes the practical and idealistic, the private and public. Located within an existing building—the 11-story Neoclassical mid-rise once occupied by the Christian Science Publishing Society—the 81,000-square-foot facility includes a technologically up-to-date research library and a small conference center for both institutional and public use. In addition to these specialized spaces, the library features a sequence of public galleries, all of which have a marked spiritual and pedagogical bent, and whose presence addresses the client's ambitious goal of making the library a forum for the public. These galleries include the Hall of Ideas, located in the double-height space that was once the building's entrance lobby and for which the MIT Media Lab has created "Word Physics," a computer-generated flow of great quotations; the Quest Gallery, which documents Mary Baker Eddy's life and work; the Monitor Gallery, an interactive display that uses the resources of *The Christian Science Monitor* to explore world events, past and present; and the renovated Mapparium, a three-story, spherical, stained-glass simulation of the globe, constructed in 1935 and long one of the city's singular attractions.

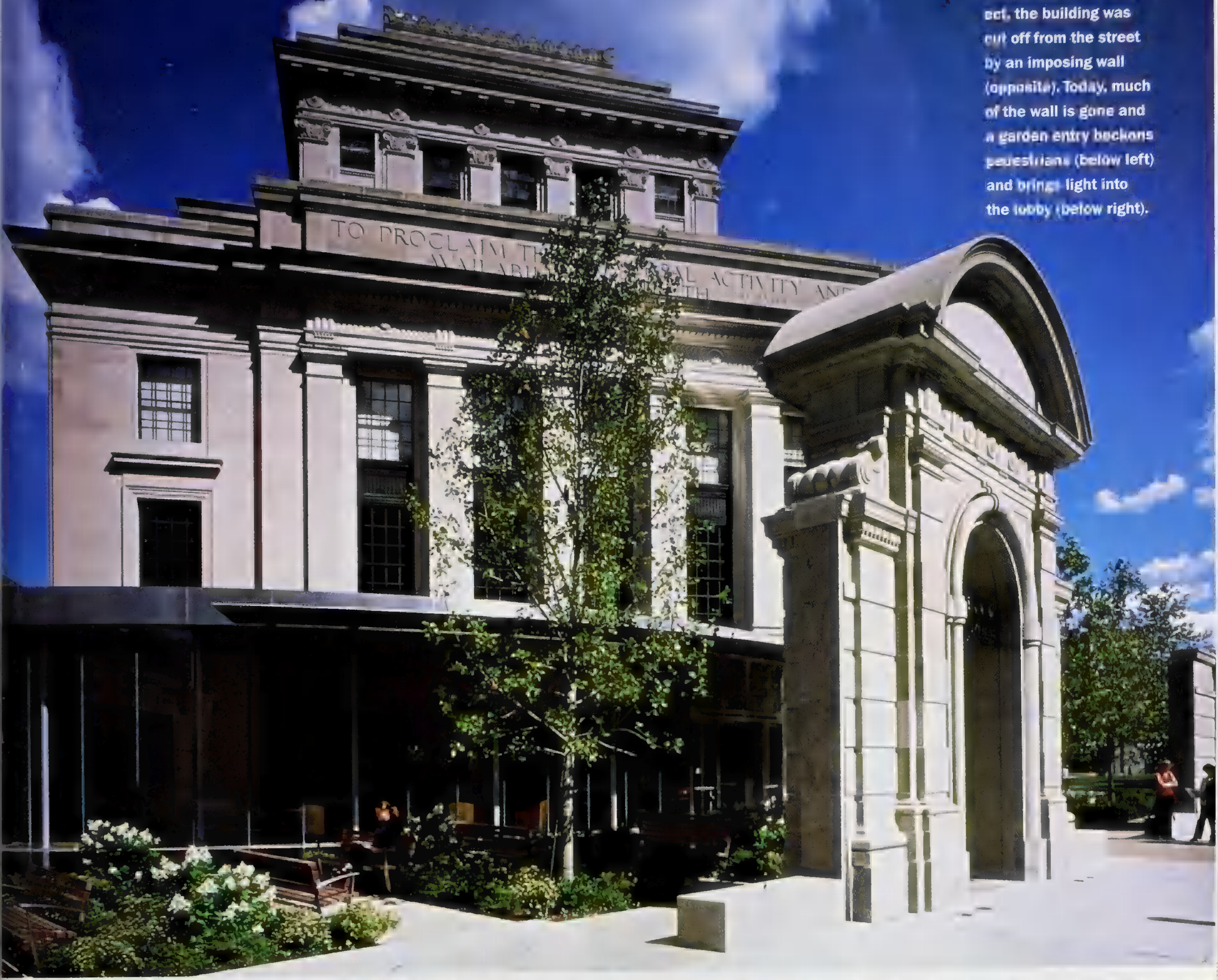
Solution

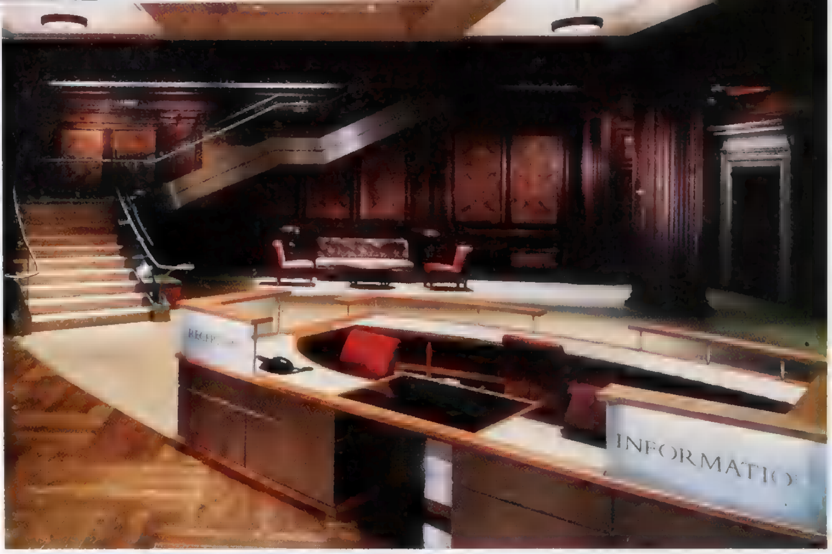
Designed in 1932 by Boston architect Chester Lindsay Churchill, the existing building was, as Ann Beha's partner Peter Sugar put it, "worn-out and dusty, but structurally strong—it had once contained the presses of *The Christian Science Monitor.*" Throughout, the architects have followed the sensible and sensitive course of refurbishing, wherever possible, existing features and finishes, and of using a contemporary vocabulary for all that is added, thus articulating old and new. The result is a lively blending of elements, including chestnut wall paneling, travertine and terrazzo floors, wrought-iron grillwork, and mosaic-tile ceilings, all retained from the original building, and new features such as a lobby staircase with a stainless-steel stringer and glass balustrade, sleek new birch furniture, and a glass curtain wall.

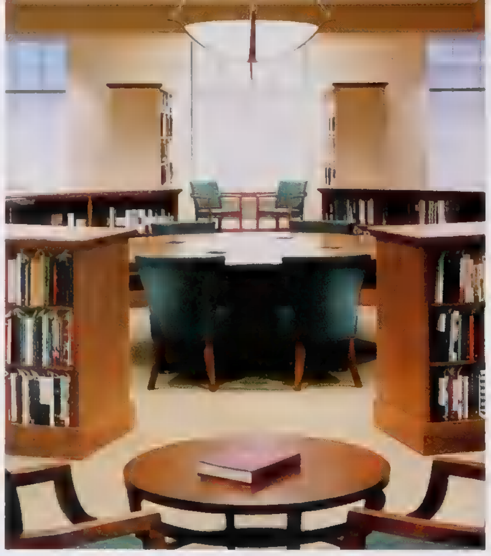
The library occupies only four floors of the old building, with research and archival spaces on the top two floors and public galleries on

Nancy Levinson is the former managing editor of Harvard Design Magazine.

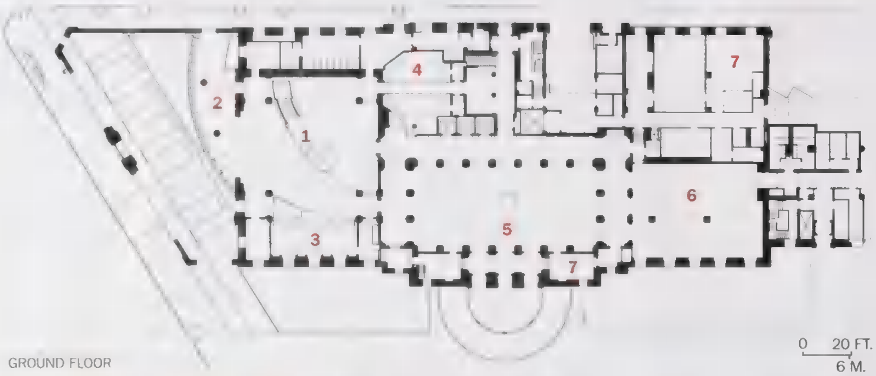
Before the library project, the building was cut off from the street by an imposing wall (opposite). Today, much of the wall is gone and a garden entry beckons pedestrians (below left) and brings light into the lobby (below right).



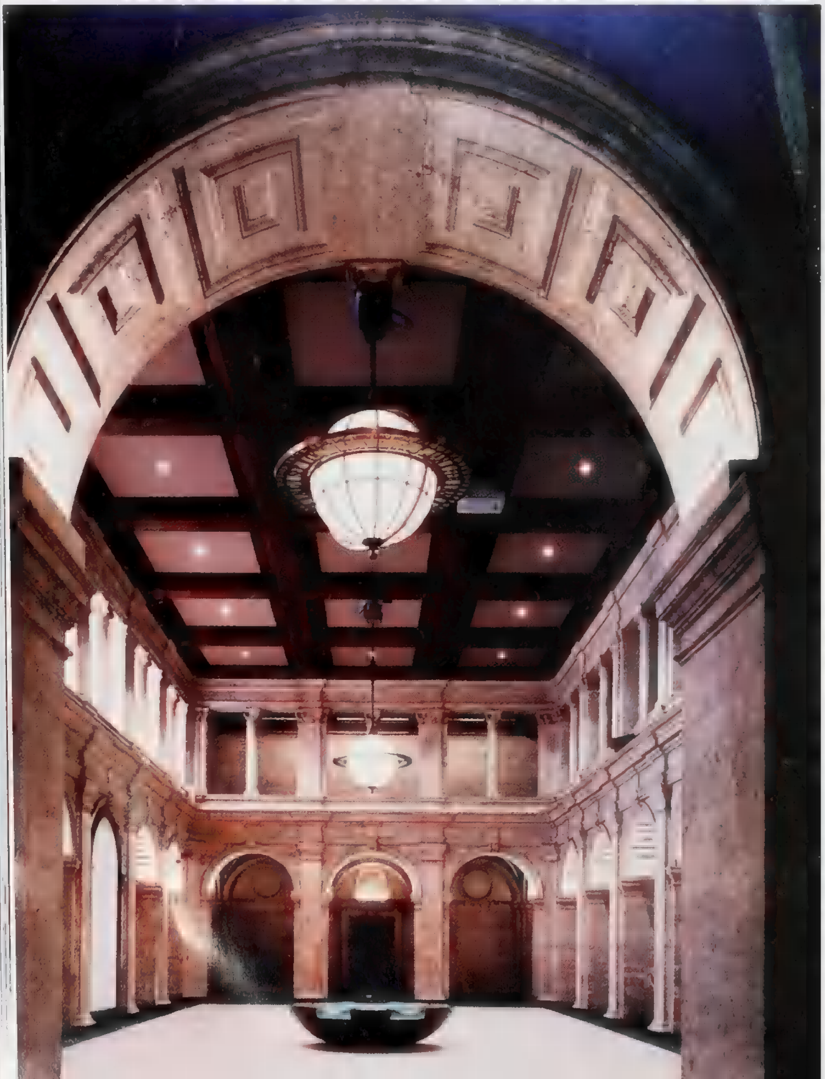




The architects inserted clearly Modern elements in the reception area (far left) and reading rooms (left) while restoring the old fabric of spaces such as the Hall of Ideas (below).



1. *Reception*
2. *Sitting*
3. *Shop*
4. *Mapparium*
5. *Hall of Ideas*
6. *Temporary exhibits and café*
7. *Office*



the lower levels. These public spaces posed a particular challenge. If the library were truly to be a civic meeting place, it would need to establish a strong presence on its street, which happens to be Massachusetts Avenue, one of the city's main thoroughfares. But the old Publishing Society was not at all a presence on the street. It was literally walled off, separated from the surrounding city by a 14-foot-high limestone wall that sheltered what had been a private garden; the building was entered from the Christian Science Plaza (part of the church headquarters designed in the early 1970s by I.M. Pei and Araldo Cossuta). The architects met this challenge with a skillful and bold gesture: move the entrance from the plaza to the main avenue, tear down the high wall, and extend the lobby toward the street, enclosing the new entry space with a gracefully curved, 16-foot-high glass wall, transparent by day, aglow by night. And from this generous architectural move there followed an equally good landscape strategy, which was to create a garden between the lobby pavilion and the street. Designed by Reed Hilderbrand Associates, the garden, like the architecture, elegantly intermingles old and new. By removing only portions of the Neoclassical wall, the designers created a landscape in which new features, such as a stainless-steel waterwall, work in crisp counterpoint to the imposing heft of the Baroque-style gate.

Commentary

Boston has long been characterized by a creative tension between past and present, tradition and progress. In recent decades, the traditional—both the real thing and the recreated—has carried the day, to the point where it was hard to recall the city's once-strong commitment to contemporary design (exemplified, for instance, by Pei and Cossuta's Corbusian-influenced Christian Science headquarters). It is heartening, then, to see the solid and dignified Christian Science Publishing Society renovated with care and craft but not undue reverence, transformed into a place where existing building and contemporary design are not clashing but complementary. ■

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There are numerous ways to determine just how sustainable so-called green products are today

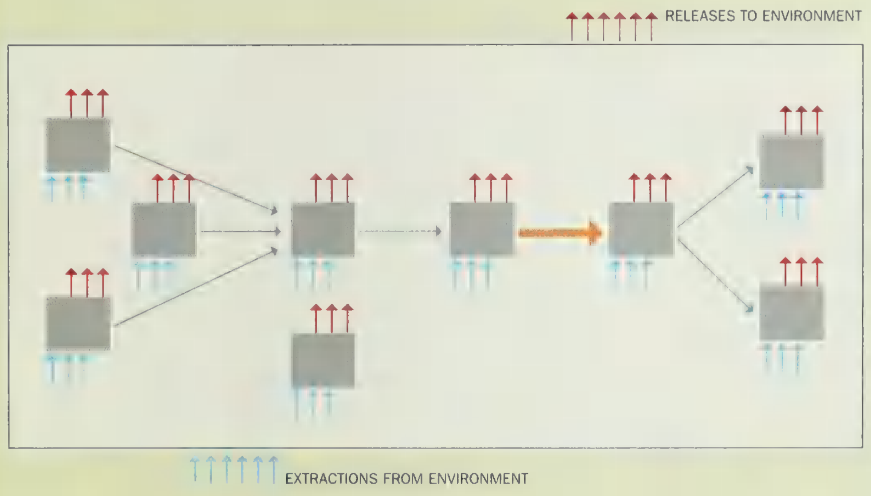
INDIVIDUAL PROJECTS MAY BE FREE OF TOXIC EMISSIONS, BUT A PROJECT'S TRUE SUSTAINABILITY QUOTIENT DEPENDS ON A SCIENTIFIC ANALYSIS OF THE LIFE CYCLE OF ALL THE MATERIALS

By Nadav Malin

A conversation with Ronald Dean of Farr Associates in Chicago illustrates how far some firms have come in their approach to green materials. Through their research and past projects, the designers at Farr Associates are very familiar with the considerations that go into choosing green materials, and factor those into their decisions as a matter of course. With that approach as a baseline, they are able to integrate green products into the broader quest for the right materials with which to construct a project. "It's not just about whether the product is green, but how well it fits into the design and the stories we're trying to tell with the building," says Dean.

For some projects, an explicitly natural or ecological aesthetic is appropriate, suggesting a certain style of visibly green products. "We designed a clay-straw retirement home for a woman," Dean explains, "and all materials going into that project tended to relate to that aesthetic or philosophy—a lot more wood, plaster, unpainted systems." But any projects can use green products and materials, either by covering natural materials with more conventional finishes, or choosing from a palette of products that are environmentally sound even if it's not obvious at first glance.

Life Cycle Inventory Analysis



SYLVATICA, INC.

Life-cycle analysis is the process by which the inputs and outputs of energy, resources, and pollution are quantified for each process in the life of a product.

What makes a product green?

So, what constitutes an environmentally sound product? What should you look for, and how can one distinguish real green achievement from marketing hype? The tools and resources available to designers have, until recently, relied almost exclusively on a handful of attributes, such as recycled content or low indoor emissions, as indicators of environmental performance. For example, the U.S. Green Building Council's LEED Rating System allocates points for the use of materials that are salvaged, recycled, rapidly renewable, locally produced, or harvested from well-managed forests.

But these attributes, considered in isolation, may be misleading indicators. Just because a product has one sustainable ingredient does not automatically make it the best environmental choice, as it may also have undesirable traits. Some recycled rubber flooring products, for example, offgas chemicals that make them inappropriate for indoor applications. And straw-panel products work great in some applications, but they are more sensitive to moisture than wood-fiber panels, making them less durable in damp climates.

To avoid these problems, researchers and environmental advocates are developing more holistic methods to determine which products are environmentally preferable. Most of these are based primarily on a system called life-cycle analysis (LCA)—not to be confused with the engineering practice of life-cycle costing. In LCA, researchers study a product from its origins as raw materials, through processing, manufacturing, and use to its ultimate disposal or reuse. For every process in this life cycle, they quantify the flows of resources and pollution, and then estimate the environmental impacts of those flows.

In theory, this comprehensive LCA approach allows us to know with more certainty which products are environmentally preferable. Indeed, the U.S. Environmental Protection Agency (EPA) recommends LCA as the basis of the Environmentally Preferable Purchasing programs that federal agencies are required to implement. The EPA has also helped develop some of the research and modeling

Nadav Malin is editor of Environmental Building News, *content director for BuildingGreen.com, and cochair of the Materials & Resources Technical Advisory Group for the LEED Rating System.*

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New software packages allow designers to calculate the environmental burdens of materials

Most life-cycle analysis (LCA) software is complex and expensive and is best used by consultants who have the training to use it appropriately and interpret the results. Two software tools are now available, however, that can be easily used by any designer. New versions of both products have recently been released with significant new features, and they have very different emphases.

The Athena Environmental Impact Estimator version 2.0 (sample output shown below) is organized around building elements or whole buildings. It is a simple modeling tool, in which the user describes the primary building elements by inputting dimensions and choosing materials from a menu of options. Based on this model, the software computes a bill of materials, and then tabulates the environmental burdens of the project. The results can be displayed as tables or charts, either for a single project or as a comparison across multiple projects.

The software does not predict energy use from building operations, but it does include an option to input that information. The impacts of that energy use, reported as either annual energy use or energy use for the entire life of the building, can be included in the LCA results. The developers of Athena EIE hope that it will eventually be available as part of standard CAD software, making environmental-impact information available during the design process at the click of a button. Athena software is available for $390 from the Athena Sustainable Materials Institute: www.athenasmi.ca.

The second tool is Building for Environmental and Economic Sustainability (BEES). Unlike Athena, which is based on building elements, BEES focuses on individual products and materials. Version 3.0 makes it possible for the first time to compare brand-specific products. For example, the user can now compare the EcoWorx carpet tile from Shaw Industries with the PowerBond ER3 tile from Collins & Aikman or the Sabi tile from Interface Flooring. (The ER3 looks slightly better than the others, although the final result depends on how you choose to weight the relative importance of the various environmental-impact categories.) Eighty products from 14 manufacturers are included in the current version. It is also possible to compare generic products based on industry-average data for those product types.

The new release of BEES uses the latest EPA methods for analyzing the data. BEES 3.0 is free from the National Institute of Standards and Technology: ww.bfrl.nist.gov/oae/bees.html.

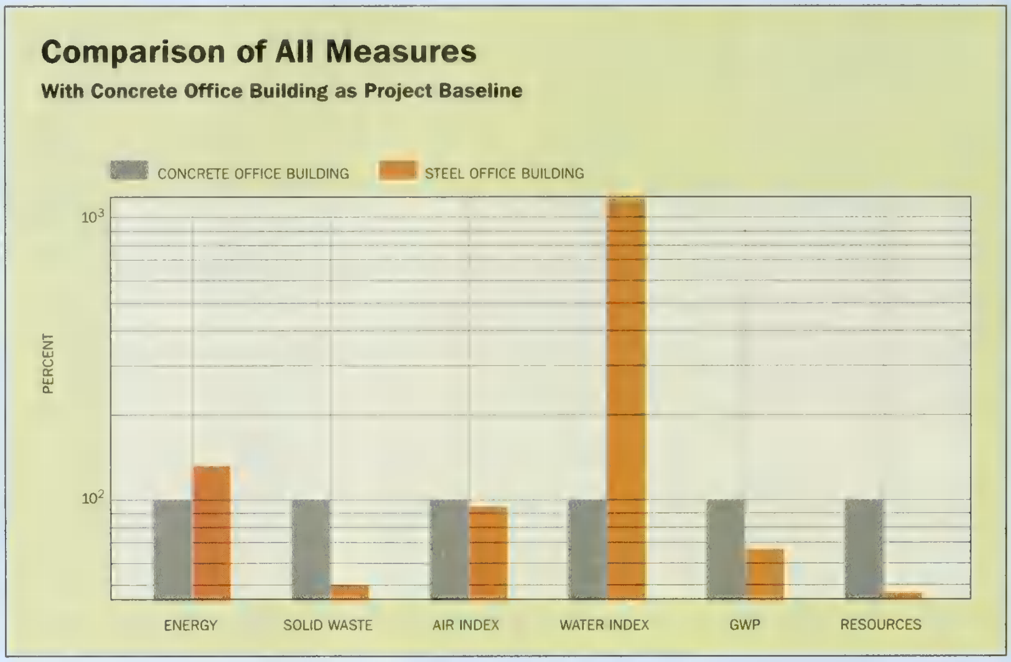

CHART: INFORMATION COURTESY

methods used to estimate the impacts of resource use and pollution associated with a product's life cycle.

In practice, however, LCA requires so many assumptions and approximations that any results it generates must be viewed with some skepticism. Even if the assumptions and underlying data are reasonably good, a margin of error of 30 percent or more is typical, so only very large differences in the scores of competing products are meaningful.

IN THE CASE OF INDOOR AIR EMISSIONS, MOST RELEASES OF VOLATILE ORGANIC COMPOUNDS (VOCS) DECREASE OVER TIME.

Before it became popular as a method for comparing and choosing products, LCA was developed to inform companies' internal product development. From this background came one of its strengths—the ability to tell us where in a product's life cycle the biggest environmental burdens are generated. In the case of building products, LCA results show that energy use or indoor air emissions during use are often the most important consideration.

For any product that affects the building's energy use, such as a variety of scales ranging from a chiller to a window or light fixture, selecting the model that saves the most energy almost always results in the lowest overall life-cycle burdens. Even ceiling tiles can make a difference—in a space that uses indirect lighting, the reflectivity of the ceiling is probably more important overall than the amount of recycled content in the tiles.

In the case of indoor air emissions, most releases of volatile organic compounds (VOCs) decrease over time. So the use of a very low-VOC paint may be important initially, but after a few months or years that benefit is negligible. Chemical emissions from ongoing maintenance, however, do not taper off in the same way. One study suggests that a single instance of stripping and waxing a floor releases as many unhealthy VOCs as are released by the installation of the flooring itself, including the adhesive, over its entire useful life.

A comprehensive look at materials highlights the fact that when we install and use a product in a building we are engaging with that product at one point in its overall life cycle. Prior to reaching our job site, the product evolved through a series of resource extraction, manufacturing, and transportation activities. After it is no longer needed in our building,

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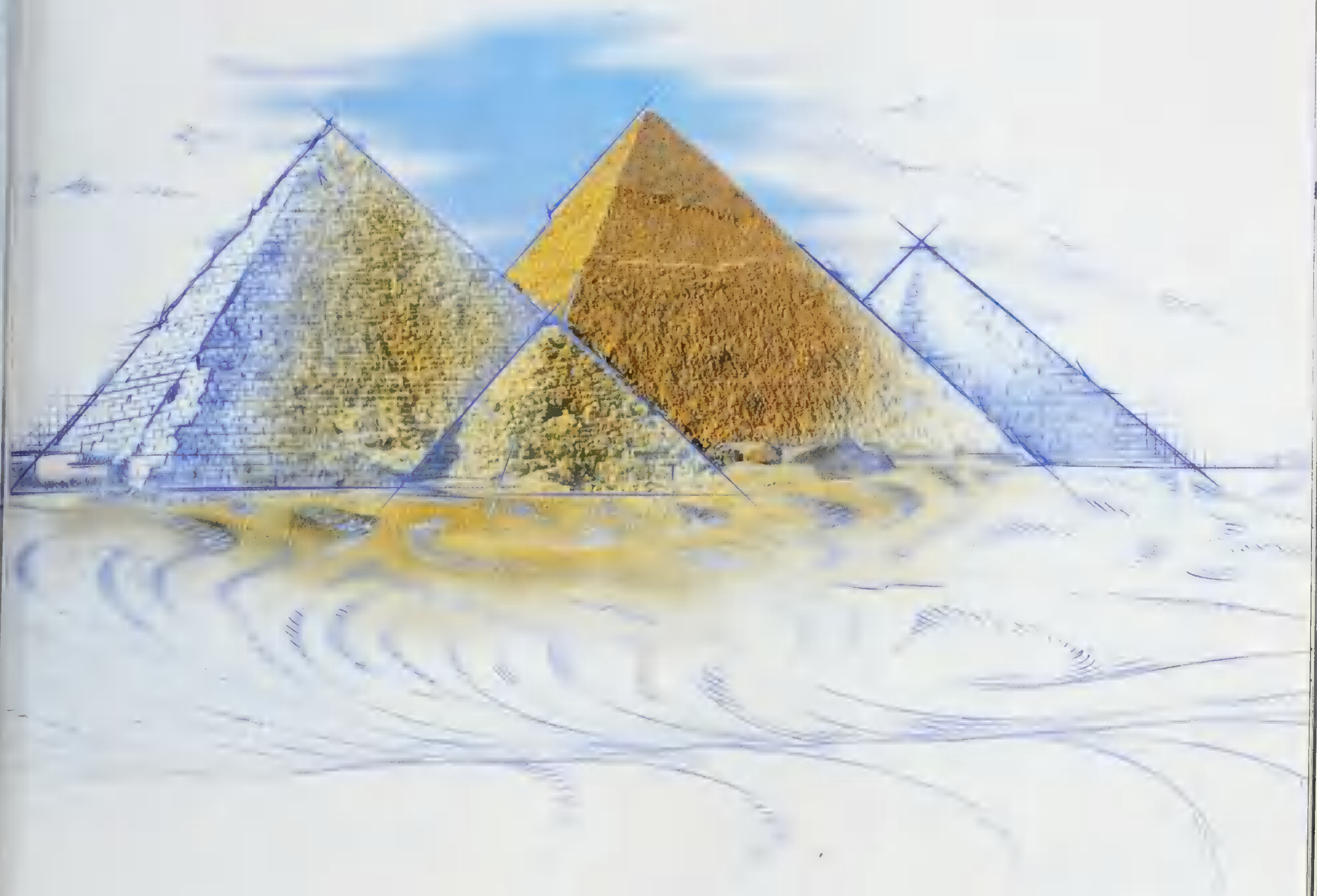

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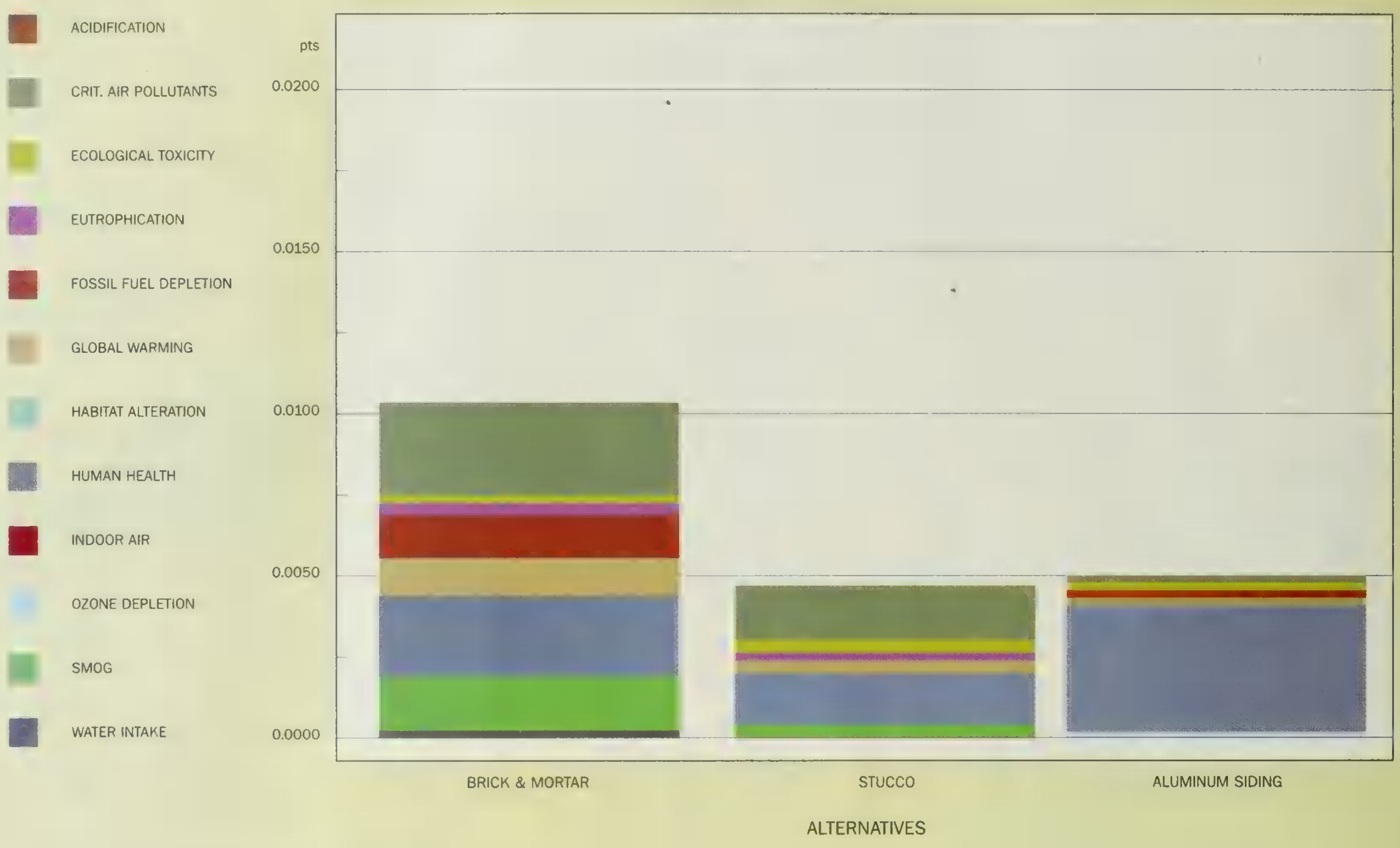

This sample chart shows three cladding alternatives—brick and mortar, stucco, and aluminum siding—that have been examined across all 12 environmental-impact categories by using Building for Environmental and Economic Sustainability (BEES), a Windows-based, decision-support software. BEES is a powerful technique for selecting cost-effective, environmentally friendly building products. All stages in the life of a product are analyzed. (The difference between BEES and the Athena program is discussed in the sidebar on the previous page.)

more activities will be required to dispose of it or prepare it for reuse or recycling. Each of these processes had its own material and energy requirements and pollution emissions.

While the environmental burdens resulting from a product's history and its future are important, they are rarely as important as the product's performance in the building. Carpet got a bad reputation in the green building world in the early 1990s, due to concerns about its role in indoor air quality problems and due to the enormous waste caused by the tons of carpet replaced each year. Since then, carpet companies have been aggressively combating that image, and nearly every company claims that its products are green. Different companies are approaching that goal in very different ways, however. Noted below are features of products by some of the most progressive carpet companies.

CARPET GOT A BAD REPUTATION IN THE EARLY 1990S DUE TO THE WASTE CAUSED BY THE TONS OF IT REPLACED EACH YEAR.

Nearly all commercial carpet uses nylon face fibers. Nylon comes in two varieties: nylon 6, supplied primarily by Honeywell and BASF, and nylon 6,6, supplied by DuPont and Solutia (formerly Monsanto). Nylon 6 is easier to recycle, while nylon 6,6 may be more durable. A number of companies, including Interface Flooring, Lees, Shaw, J&J Industries, offer recycled-content fiber, though efforts to get large-scale recycling efforts going for turning old carpet fiber into new have not yet become commercially viable. Interface has also experimented with natural fibers, such as hemp, in commercial carpets, and plans to release carpet with fibers made from agriculturally derived plastics.

As conventional dyeing processes use a lot of water and generate significant waste, solution-dyed nylon is preferable. Many carpet fibers are treated with stain-resistance and mold-inhibiting chemicals, which can be beneficial (reducing the need for cleaning agents, reducing mold), yet the treatments themselves may also represent a health and environmental risk.

Nearly all companies use polypropylene fabric as the primary backing into which the face fiber is tufted. As petrochemical resins go, polypropylene is relatively simple and benign. Lees' Metafloor product line takes a unique approach by beefing up and pigmenting the primary

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New wood-certification projects have emerged to address concerns about logging practices

Wood has come under fire as a building material in the U.S., mostly by environmentalists concerned about logging in the old-growth forests of the Pacific Northwest and in tropical rain forests around the globe. From a manufacturing perspective, however, wood is a relatively low-impact building material, because trees do most of the manufacturing themselves, using photosynthesis. The amounts of energy and resources needed to mill and dry wood are small compared with those used to manufacture concrete or steel. To address concerns about logging practices (and the associated loss of wildlife habitat and siltation of streams from runoff), a number of certification programs have emerged.

These programs monitor logging practices on the ground and certify forestry operations that meet their standards. The only such program that has widespread endorsement is that of the Oaxaca, Mexico–based Forest Stewardship Council (FSC). The FSC's "Principles and Criteria" aim to ensure that forestry practices are environmentally responsible, socially beneficial, and economically viable. These global principles are translated into meaningful standards at a local level through a region-specific process of setting standards.

FSC also accredits and monitors certification organizations. These independent, third-party auditors annually evaluate compliance with FSC standards to award certifications. In addition to certification of forest-management practices, FSC-accredited organizations certify companies that process, manufacture, or sell products made of certified wood to ensure that a reliable chain of custody can be established. The majority of FSC certification audits performed in North America are conducted by SmartWood and Scientific Certification Systems (SCS).

Simply adding the FSC requirement to your standard specification is not enough. First, the quantities, species, and grades of wood that are available with FSC endorsement are limited, so you must find out what is available that will fit the needs of your project. Second, even if the material is available, it is best not to specify the highest grades of wood (at least not in large quantities), because only a small fraction of the lumber from any one logging operation can meet those grades. Specifying lower-grade wood greatly reduces the pressure to cut large, old-growth trees, and can save a lot of money. Often structural requirements can be met without using the highest grades.

PHOTOGRAPHY: COURTESY ROY O. MAR

To ensure that the wood used is actually certified, your specifications should require that project contractors and subcontractors submit vendor invoices containing their chain-of-custody certification numbers and identifying each certified product on a line-item basis. For more information, contact the Certified Wood and Paper Association: www.certifiedwood.org.

backing so that it can become part of the exposed surface of the floor covering, thus greatly reducing the amount of face fiber needed.

Most broadloom carpet is made with styrene-butadiene latex (SB latex) and a chalk filler, as the secondary backing. High-end products use a more dimensionally stable urethane backing. Many companies now offer a urethane backing option from Universal Textile Technologies that uses a soy-based polyol as one ingredient, comprising about 7 to 10 percent of the backing by weight. Lees Carpets' two newest carpet lines use the Unibond RE backing, which contains 20 percent postconsumer recycled content.

SOME COMPANIES HAVE WELL-DEVELOPED SYSTEMS FOR TAKING BACK USED CARPET AND UTILIZING IT AS A RESOURCE.

Carpet tile products use either PVC (Interface, Collins & Aikman) or urethane (Milliken) backings. Collins & Aikman has led the recycling charge, with technology that shaves off most of the face fiber for recycling as nylon, and then recycles the rest of the carpet by mixing it into PowerBond E3 backing for new carpet. The residual nylon fibers in the recycled backing actually improve the product's performance. Interface Flooring's GlasBac RE backing system also uses a high percentage of recycled material.

Some companies have well-developed systems for taking back used carpet and utilizing it as a resource. Milliken Carpet, with its Earth Square process, extends the life of carpet tiles by taking back used tiles, retexturing them, cleaning them, and overprinting them with a new pattern so they can be resold for about half the cost of new tiles. Interface Flooring's Solenium product, introduced in 1999, was an effort to solve the future reuse problem by making it easy to separate the components.

Carpet innovations show that performance and sustainability aren't mutually exclusive. If a product's function affects the amount of energy or water used in the building, then how well it functions determines how good it is environmentally. More fundamentally, how a product or material works, functionally and aesthetically, is as critical in a green building as in any good design—if it doesn't do its job, then it doesn't matter how environmentally friendly it is. ■

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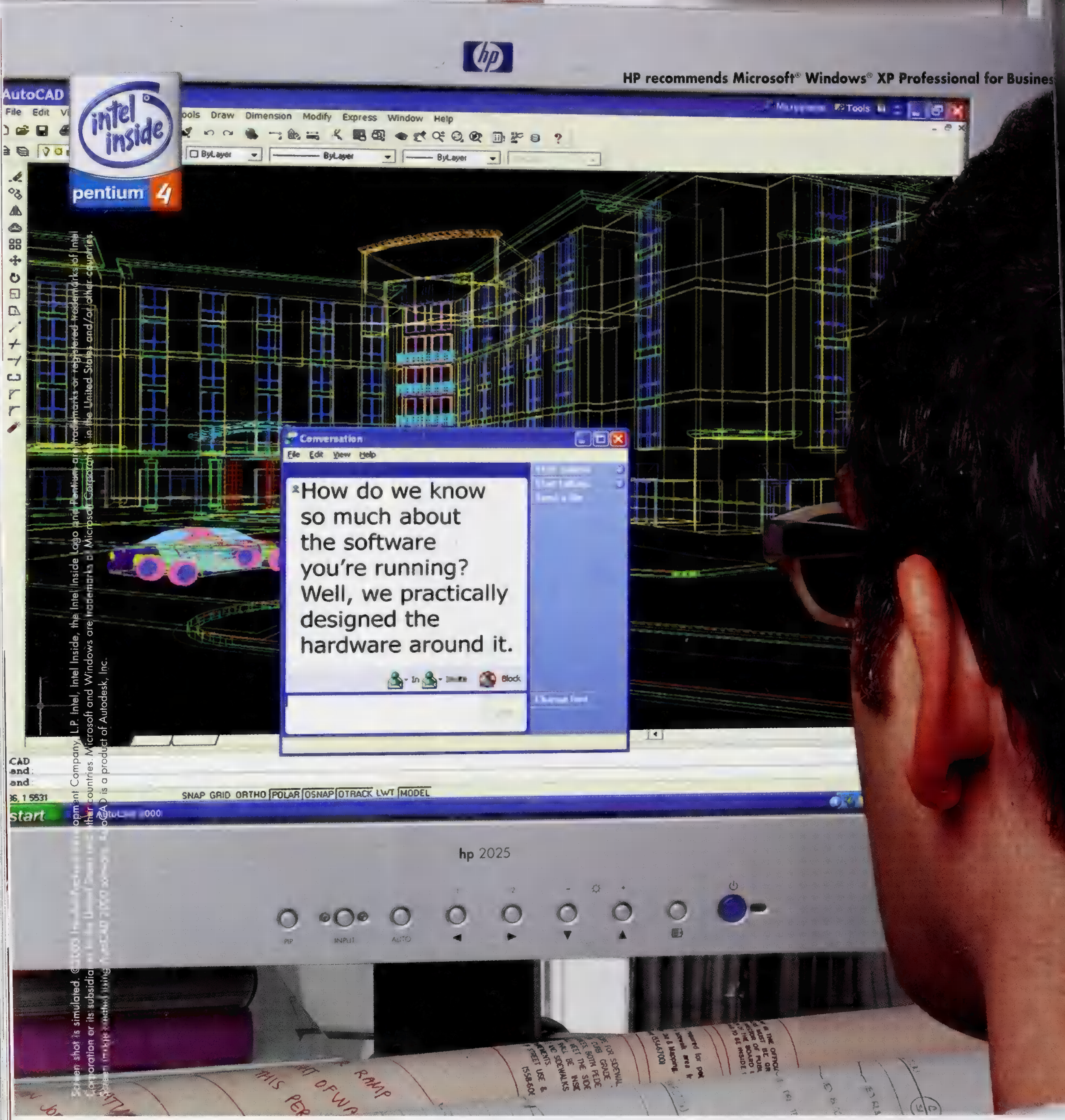
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Interiors go with the flow

By Alan Joch

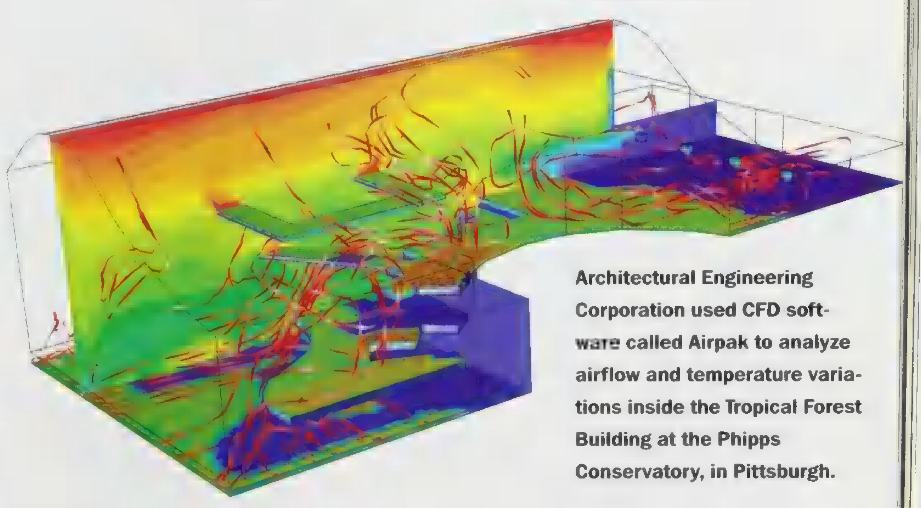
When future visitors stroll through the Clinton Presidential Center in Little Rock, Arkansas, they'll have little idea how much of their physical comfort depends on what's underfoot. A special floor slab will house an exotic heating and cooling system that will variously circulate hot or cold water throughout the museum to regulate the indoor temperature according to the seasons.

But the floor won't be the only environmental regulator. Streaming sunlight from an all-glass, west-facing wall will enter the space to help heat the interior and create buoyant layers of air and comfortable surroundings for guests.

This intricate dance of temperatures and air currents hasn't been left to chance. Engineers are spending months poring over sophisticated computer models that forecast the temperatures at every point within the building for each season of the year, and for specific times of each day. The environmental model has became an essential component of the design process.

At the heart of this model is the arcane technology known as computational fluid dynamics (CFD), whose complexity makes it a highly specialized calling with the reputation of something bordering on Black Magic. By first simulating a proposed design of the library and then breaking up the 3D model into thousands of tiny cells, CFD software lets engineers map, in great detail, airflow characteristics and temperature variations, and pass those analyses on to architects. In the case of the Clinton Presidential Center, the firm Polshek Partnership, in New York City, uses these full-color animations and diagrams to revise various interior configurations and floor plans, like partitions and elements of a mezzanine, to achieve the right airflow for comfortable temperatures year-round.

"There was no way we could do a radiant floor slab in the Clinton Center without extensive CFD simulations," says Daniel H. Nall, AIA, and senior vice president of Flack + Kurtz, the New York City engineering firm that performed the CFD analyses. "It allowed us to see what's important for creating comfort in the occupied zones and what happens to this comfort level when we start messing with the design."



Architectural Engineering Corporation used CFD software called Airpak to analyze airflow and temperature variations inside the Tropical Forest Building at the Phipps Conservatory, in Pittsburgh.

IMAGES: COURTESY ARCHITECTURAL ENERGY CORPORATION

New uses

Once the exclusive realm of aerospace engineers using airflow models to create new generations of wing designs, CFD gradually evolved in the early 1990s to become a tool to help designers of commercial and public buildings, starting first in Europe and Japan and eventually reaching the U.S. Still an expensive niche technology used only for select projects, CFD helps architects gauge the effectiveness of exotic HVAC systems, especially those used to regulate large open spaces like atria. The technology can also model the air quality within a proposed building or judge the effectiveness of new or nontraditional types of ventilation systems, such as the radiant flooring that will be used in the Clinton Center.

In addition to the Clinton Center, Flack + Kurtz has used CFD for a new dormitory at Dartmouth College, which also makes use of a radiant-heating and -cooling floor slab. "We're trying to [air-] condition the people, not the space," Nall says about the design goals of those projects. "People are not going to be walking on the ceiling, so we're working on creating comfortable conditions in the zones of the buildings that are actually occupied. CFD is the only way we can get a handle on what's going on in these spaces." The only alternative, he says, would have been to build full-scale mock-ups of the structures and take physical readings—obviously a cost-prohibitive exercise.

Flack + Kurtz isn't the only engineering company to conduct CFD analyses on buildings. Steven Winter Associates in Norwalk, Connecticut, used CFD to help optimize the operation of an HVAC system with natural ventilation at the Adam Joseph Lewis Center for Environmental Studies at Oberlin College, a project designed by architect William McDonough, AIA. Architectural Energy Corporation (AEC), a Boulder, Colorado, engineering and design firm, worked with the Pittsburgh architecture firm IKM to create an addition to the Phipps Conservatory and Botanical Gardens, in Pittsburgh. The addition (called the Tropical Forest Building) houses a rain forest, and the CFD analysis depicted not only temperatures and airflow, but also patterns of sunlight throughout the year. "Our

Alan Joch is a technology and business writer based in New England. Contact him at ajoch@monad.net.

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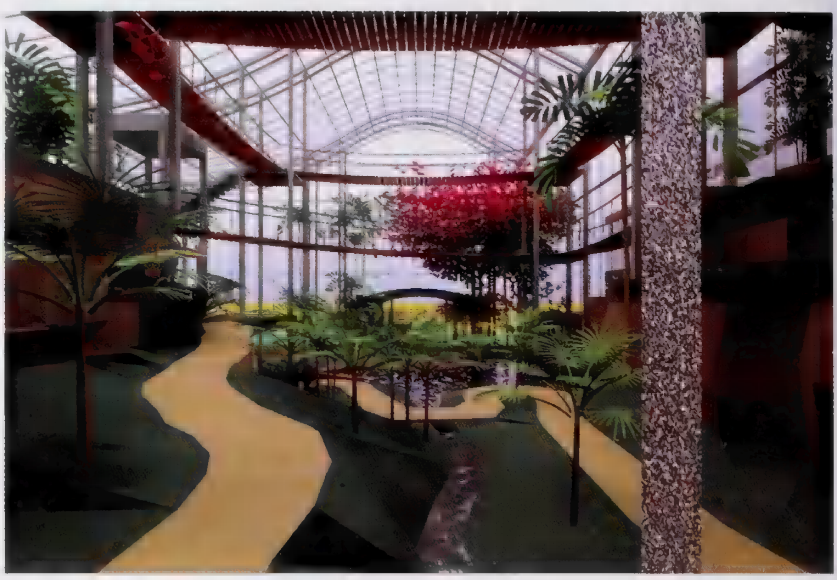

The Tropical Forest Building at the Phipps Conservatory lets in plenty of natural light for its permanent botanic residents. The simulation software Radiance was used to create this rendering of lighting conditions, and the results were used in the CFD analysis.

clients are plants, which need the right amount of light, the right spectrum of light, and the right temperature," says Michael Holtz, AIA, AEC's president. "We're looking at airflow to make sure we achieve acceptable conditions." In addition, Arup, a London-based engineering company, used CFD to help remodel the air-conditioning system of the historic London Coliseum, the home of the English National Opera.

In each case, CFD provided "what-if" capabilities that helped architects and engineers reconcile environmental and design considerations. "Architects come to us with design objectives and CFD helps them develop a design that meets those objectives," Holtz says. "Once a preliminary design is developed, CFD can then be used to evaluate its effectiveness."

These capabilities are helping CFD find more widespread applications, especially for more innovative designs. "It gives us more freedom to play with new ideas," says Jelena Srebric, assistant professor and CFD instructor at Pennsylvania State University's department of architectural engineering. "CFD allows us to test [models and designs] that don't yet exist."

Detailed models

In recent years, CFD software has become more mature, and commercial products geared for building design are appearing on the market to ease the complexities of creating models. In addition to their CFD analysis engines, a handful of vendors are now marketing user-friendly interfaces for those products that are designed to simulate building conditions. These include Airpak, by Fluent. In time, CFD will become easier to use and economical enough to be applied to more mainstream designs, Srebric believes.

The analysis process typically begins by importing a CAD file with a proposed design into a commercial CFD program, which then plots the geometry of the space in 3D and the materials that could affect airflow and temperatures. The model also estimates boundary

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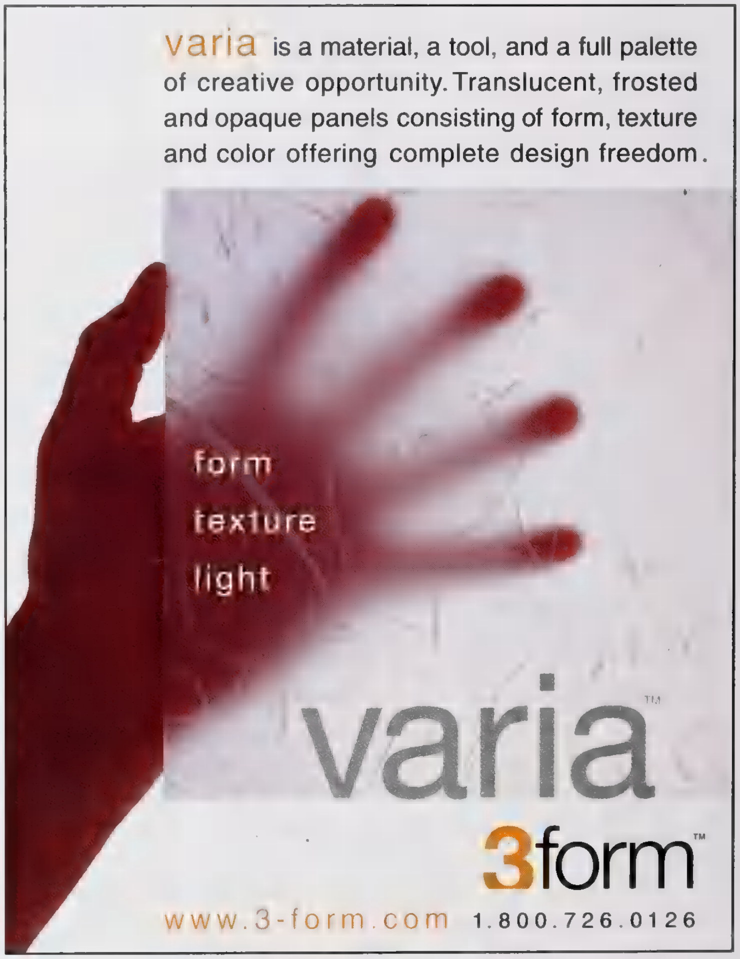

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conditions—the temperature of surrounding structures or the amount of sunlight streaming into the design space. It's at this point that the program creates the 3D grid of cells that will allow engineers to look at the area in fine detail. A grid for a relatively small 20-by-30-foot office space, for instance, may contain more than 100,000 of these cells, each of which may require nine different complex mathematical equations to properly model airflow and thermal properties, according to Srebric.

CFD ANALYSIS HELPS ARCHITECTS DESIGN CUTTING-EDGE INTERIORS THAT ARE ALSO COMFORTABLE.

The results are then sent to the analysis portion of the CFD software, which crunches the numbers to develop graphical representations of airflow and surface temperatures. The process of building models, running simulations, and analyzing results may take anywhere from a couple of weeks to a period of months, depending on the size of the space, and the number of design iterations the project goes through, Holt says.

No matter how sophisticated the CFD models may be, it takes more than just plugging some numbers into a software application to end up with an effective design. "Reality is always more complicated than any computer can ever simulate," Nall says. "The best we can do is create a simplification of reality by picking out those factors that are most important." For instance, the configuration of walls within a particular floor plan may matter more than the material those walls are made of. These sorts of judgments take time and experience, and for that reason Srebric advises caution when architects choose consultants to conduct analyses. "Anyone giving me CFD results must convince me of their accuracy," she says. "There must be some validation through benchmark comparisons with similar projects. Never trust anybody who is just delivering results [for a current project]."

This work doesn't come cheap. CFD analysis may add up-front costs of anywhere from $10,000 for smaller projects to $100,000 or more for large buildings, Srebric says. "It's too time-consuming and expensive for every project," she concedes, which is why CFD has made little penetration into residential or small-scale work. But if a client wants to build something with unconventional forms or materials, CFD analysis may mitigate the risk of ending up with an uncomfortable interior. "The technology helps make up for the fact that you're building something that no one has ever done before," says Nall. He adds that for projects characterized by innovation, a CFD analysis is often included as part of Flack + Kurtz's basic engineering services.

Science meets art

Fortunately, when CFD is done correctly, it takes on a life of its own that goes beyond reams of inscrutable statistics. "Once you're over the simulation hurdle, using the results is a pure pleasure," says Srebric. The resulting graphical models exhibit an almost artful display of colors, contours, and movement that together can turn the calculations into visual treats. More importantly, these representations help architects gain confidence in the validity of the design they offer a client. "The beauty of CFD is it allows us to test a building's performance before it's built," Holtz says. "If all your failures happen during design, you can deliver a successful solution when it's time to do the actual building." ■

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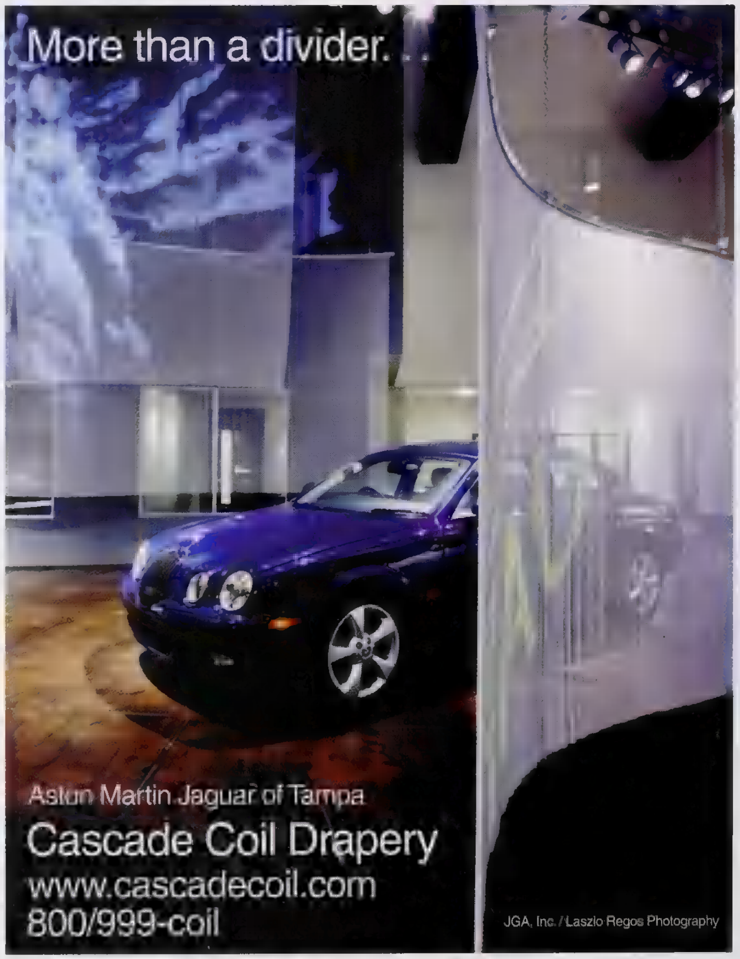
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Lighting

The sacred and the profane, illumination and illusion, and the student scene, too

BRIEFS

The 25th Session of the Commission on Illumination commences in San Diego on June 25. The quadrennial, weeklong lighting conference focuses on presentations by world experts. For information, visit the Web site www.cie-usnc.org. **If you are ailing from seasonal affective disorder**, Oliver Sacks's book *Uncle Tungsten* may be just the tonic. He gives a fascinating account of his uncle's lightbulb manufacturing company, Tungstalite, in prewar England. Don't forget to brush up on your high school chemistry; Sacks's description of Mendeleevian's development of the Periodic Table of the Elements is mind-boggling. *Charles Linn, FAIA*

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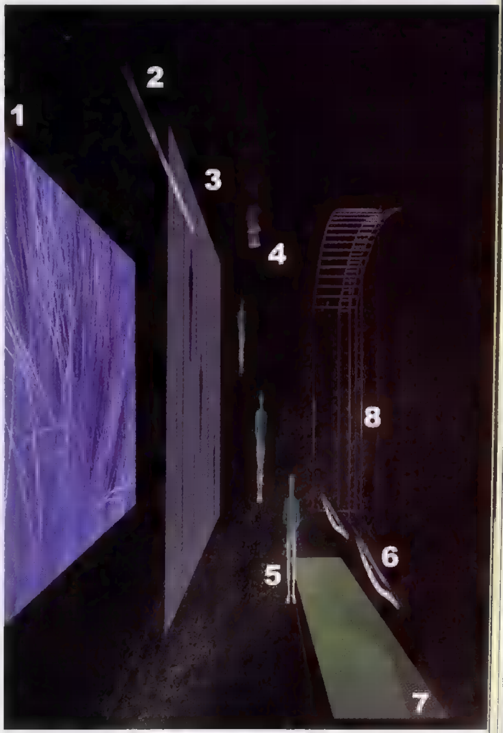
The present age prefers the sign to the thing signified, the copy to the original, fancy to reality, the appearance to the essence, for in these days illusion only is sacred, truth profane," declared philosopher Ludwig Feuerbach. He was writing in *The Essence of Christianity* in 1843, but lately we at RECORD have been thinking a lot about the sacred and the profane, appearance and illusion, and, well, Christianity. We lighting editors are not always such a philosophical crew, but the juxtaposition of projects this month—and their strategies for illumination—run just this thought-provoking gamut.

For the Friends Meeting House in Manhattan, principal lighting designer Linnaea Tillett, IALD, investigated the history and traditions of the Quaker faith to create versatile illumination that sublimely infuses a spare, sacred space. Simplicity was the essence of the design. Elsewhere in this issue, at Supperclub sites in Amsterdam and Rome, and at the LiT club in Oklahoma City, we've spotted a curious trend (here's the profane part): lighting as a social cue for rest-room design. A trip to the loo, it seems, is part of the enhanced nightclubbing experience, boldly embellished with black lights and colored fluorescent gels. Now if only we could figure out how to operate the unconventional sinks.

Meanwhile, on a plane floating somewhere between the sacred and the profane, college students are pursuing lighting designs with audacity and imagination. Recent Parsons School of Design graduate Conor Sampson, for example, created an exploded view of a store window's lighting (illustration, right) that reminds us of a vintage Hitchcock cinema poster or perhaps a Surrealist's eye chart. Beginning on page 194, you can read more about recent trends in architectural lighting education in the U.S.



With sadness we note the passing of two leading lights in design. Architect Charles Morris Mount died at age 60 on November 8, 2002. One of his last projects, the McDonald's on 42nd Street in New York City, brought Broadway luster to the the fast-food-venue format. Italian architect and industrial designer Achille Castiglioni, renowned for astounding lighting fixtures such as the Tojo lamp, died on December 2 at 84. They will be missed. *William Weathersby, Jr.*

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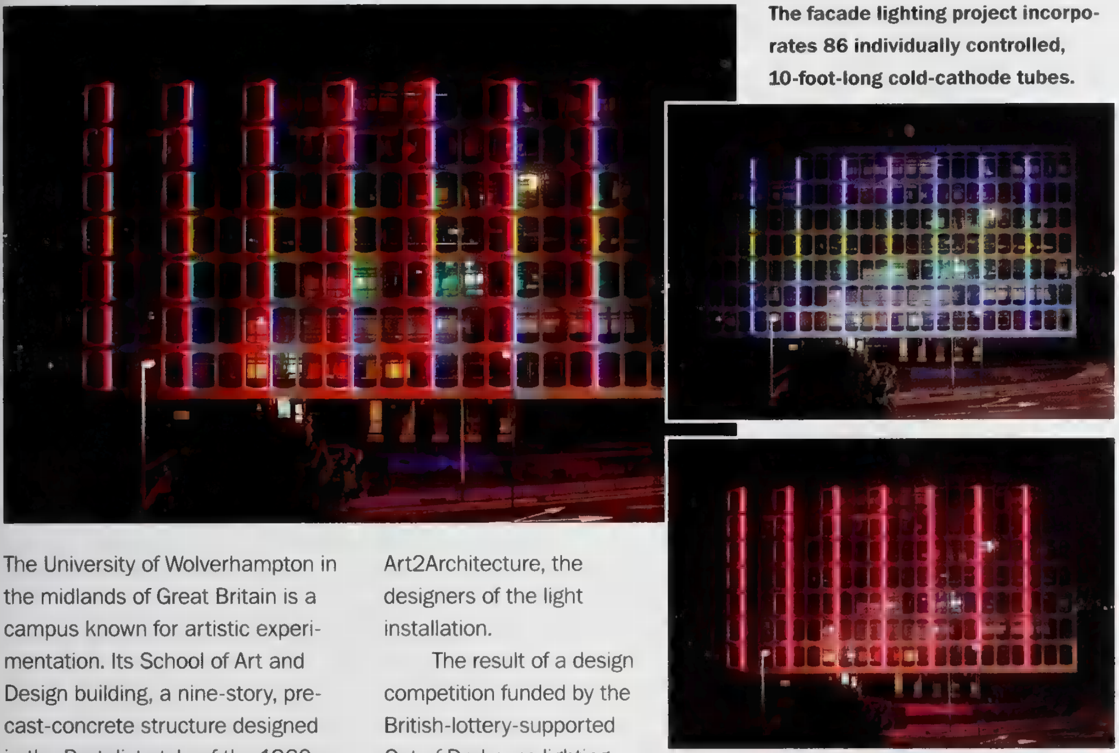
Creative Uses

A 1960s university building gains a new sheen with cold cathode • Ode on a Trojan dawn hits Manhattan • Patrons in Rome and Amsterdam dance through the light at Supperclub

An art and architecture collaborative reinvigorates a dated campus facade in Great Britain



The facade lighting project incorporates 86 individually controlled, 10-foot-long cold-cathode tubes.

The University of Wolverhampton in the midlands of Great Britain is a campus known for artistic experimentation. Its School of Art and Design building, a nine-story, precast-concrete structure designed in the Brutalist style of the 1960s, recently served as a canvas for a colorful play of shadow and light.

"The idea of reconfiguring a landmark in Wolverhampton came from the town's motto, 'Out of darkness cometh light,' " says architect Igor Marko, principal of the firm Art2Architecture, the designers of the light installation.

The result of a design competition funded by the British-lottery-supported Out of Darkness lighting program, Art2Architecture's work is the largest cold-cathode lighting project in the United Kingdom. Marko and his partner, artist Peter Fink, collaborated with Neolec Lighting, a company with 30 years of experience in the application of cold cathode.

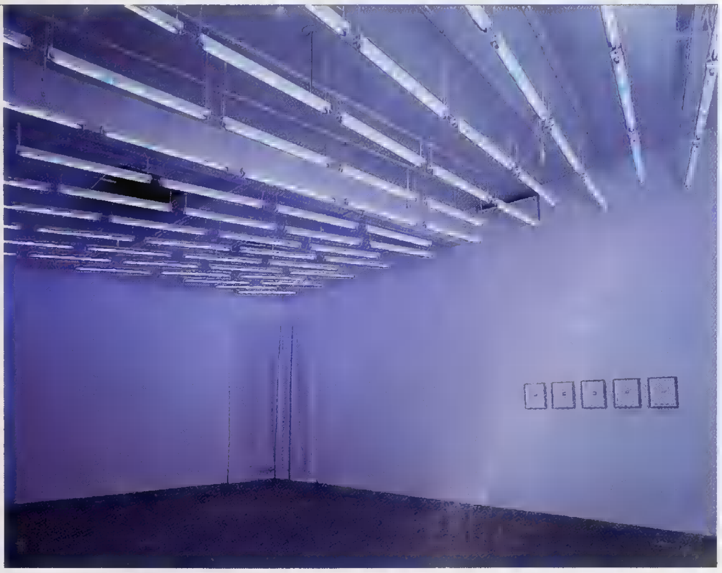
Called *Lightlines*, the work "echoes through a graphic, linear pattern of light the architectural design of the Wolverhampton building, animating its proportions and massing," Marko says.

The lighting installation encompasses 86 individually controlled, 10-foot-long cold-cathode tubes mounted between the elevational fins of the facade. The lowest tubes are protected by polycarbonate covers. The installation was designed to fit externally onto the building, concealing both the cable runs and the tubes, so the fixtures do not appear prominent in daylight.

The animated lighting program runs a variety of changing patterns and sequences within a five-minute loop, dimmed for slow or fast changes. The light show will be redesigned annually by Art2Architecture, and relamping is projected after seven years.

Art2Architecture is a company dedicated to collaborative ways of working and employing artists, architects, and urban designers. Its interdisciplinary projects range from major lighting installations, urban centers, ecological parks and bridges, and site-specific artworks employing IT technologies. For a look at a portfolio of other projects, visit www.art2architecture.co.uk. *William Weathersby, Jr.*

Artist Spencer Finch offers a meditation on the quality of light cast by Troy's dawn sky



Fluorescents fitted with filters capture the light of ancient Troy in Finch's *Eos*.

Color, light, memory, and history are the obsessions of New York artist Spencer Finch. *Eos*, a monumental room-size installation that created a meditation on the quality of light Finch encountered during a trip to the ancient ruins of Troy in western Turkey, was part of an exhibition of his work held at Manhattan's Postmasters Gallery last November and December. Fitted with carefully calibrated spectrum gels, the 75 ceiling-mounted fluorescent tubes approximated the light conditions present at dawn in the landscape at the site in October 2002. "The landscape has been reduced to pure light," Finch says.

The exhibition, which also featured 100 ink drawings of colors from the artist's dreams in the form of Rorschach blots, continued Finch's exploration of the gaps between objectivity and subjectivity. Trained at the Rhode Island School of Design, Finch often uses electric light as a medium. For the installation at Postmasters, he received technical assistance from Capital Light and Phillips Lighting. *WW*

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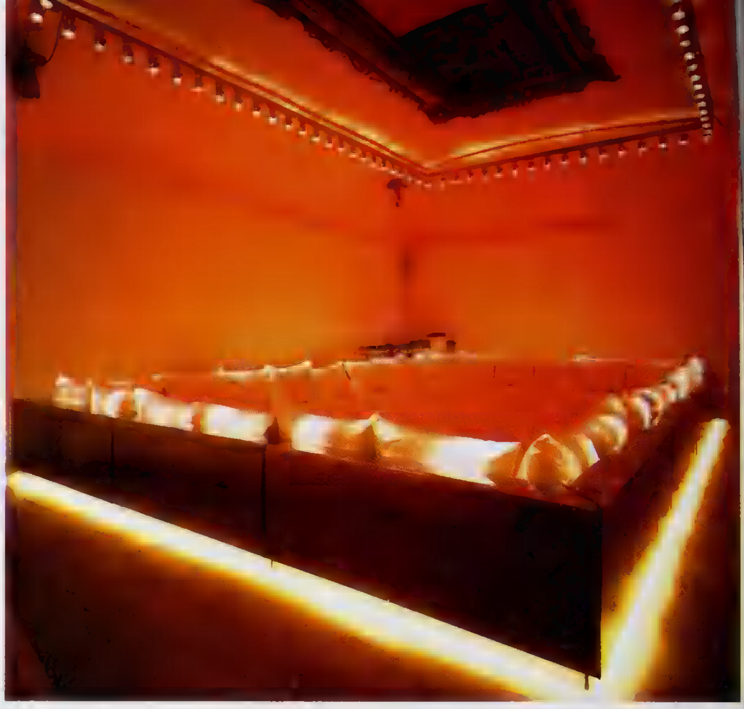
Creative Uses

Moody colored lighting sets the scene for dancing and dining at two Supperclubs



Monochromatic furnishings and materials in a lounge of Supperclub Amsterdam (below) are a canvas for colored lighting. At Supperclub Rome (above), downlights frame a fresco and cast a glow on communal seating.

A decade is a long life for a nightclub. The staying power to endure beyond a decade is immortality. For European clubgoers, Amsterdam's renowned Supperclub has attained such divine status. Opened in 1990 by a group of artists, the innovative restaurant/club/art gallery was recently expanded at its location in the old center of the city and continues to draw crowds with its "communal" approach to nightlife.

"Freedom is the key word here," says owner Bert van der Leden of the renovation, "just as it has always been." The Supperclub's freethinking philosophy is based on maintaining a "multisensory" environment that encourages camaraderie among strangers. The Amsterdam-based firm Concrete Architectural Associates was hired to revitalize that concept and to export the same ethos to a new sister Supperclub in Rome.

Concrete's approach to lighting both nightspots is as colorful and spirited as the club mavens the franchise attracts. On the first floor of Supperclub Amsterdam, a 1,775-square-foot, two-tiered restaurant is painted and custom-furnished in uniform white, a blank canvas for colored lighting. A truss of automated luminaires and color changers paint the room in hues that can shift with the mood of the crowd. The restaurant in Supperclub Rome makes similar use of LEDs, PAR16s, and fluorescent technology that is capable of altering the color scheme of the interiors.

Communal seating in dining areas furthers the owner's aim that patrons feel a sense of togetherness. Seating around the perimeter of the restaurant on both levels is ultracasual, comprising mattresses covered with white sheets. Diners are encouraged to remove their shoes and lay back against plush cushions. Classic Modern chairs designed by Verner Panton surround dining tables set in the center of the space. The tables were inspired by the design of elephant drums and are sturdy enough to hold diners who venture to dance atop them once dinner has been cleared.

On the lower level, a 1,625-square-foot lounge is for patrons seeking a more intimate setting. The pure white color scheme of the main floor is repeated downstairs, again as a backdrop for colored lighting. Gelled fluorescents uplight fabric-draped stucco walls and bathe seating in a warm glow of vibrant hues.

Lighting creates a dramatic transition into Le Bar Rouge, an intimate bar and dance area that, apropos of its name, is dressed in shades of red. Gelled fluorescents uplight the bar while a truss of mini PAR16 spotlights defines the area behind the bar and a deejay table.

Selective illumination in rest rooms, which are partitioned according to sexual preference, not gender, is a Supperclub signature. The opposite spectrum of the restaurant and lounge, rest rooms are completely furnished in a dark palette with black tiles, stalls, toilets, counters, and large square blocks for seating. Black light illuminates the rest rooms, which the owners envisioned as a darker alternative for patrons too intimidated to make introductions in the well-lit main spaces. Strategically placed mirrored glass affixed to the stalls adds a voyeuristic touch.

Adapting the Supperclub concept to a historic palace near the Pantheon in Rome last year, Concrete worked under the close supervision of the city's preservationists. The architects restored elements of the ancient structure, including frescoes and travertine steps, and married the historic with the contemporary furnishing elements. The patina of centuries-old frescoes juxtaposed with colored lighting continues to position this outpost of Supperclub as another intriguing international nightspot.
Leanne B. French

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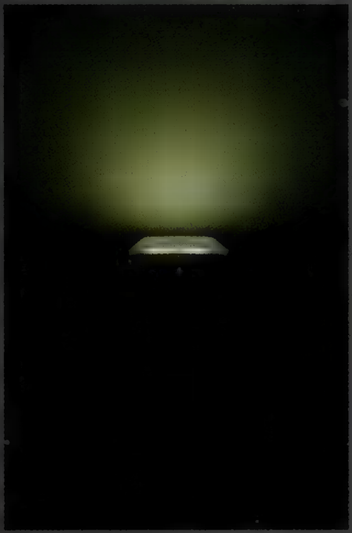

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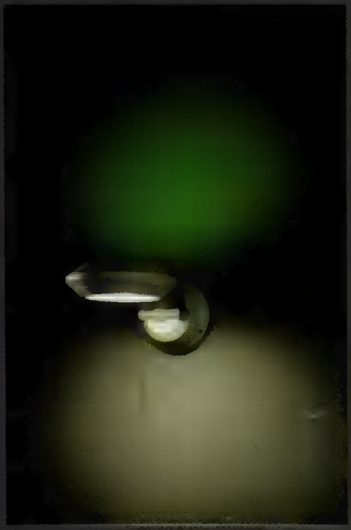

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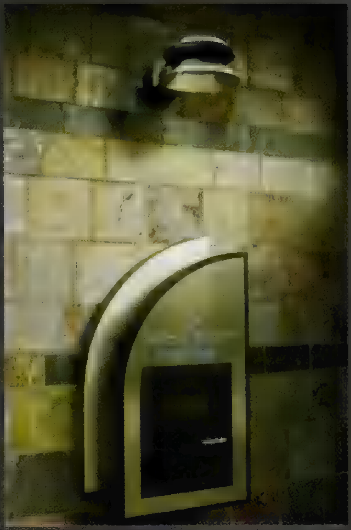

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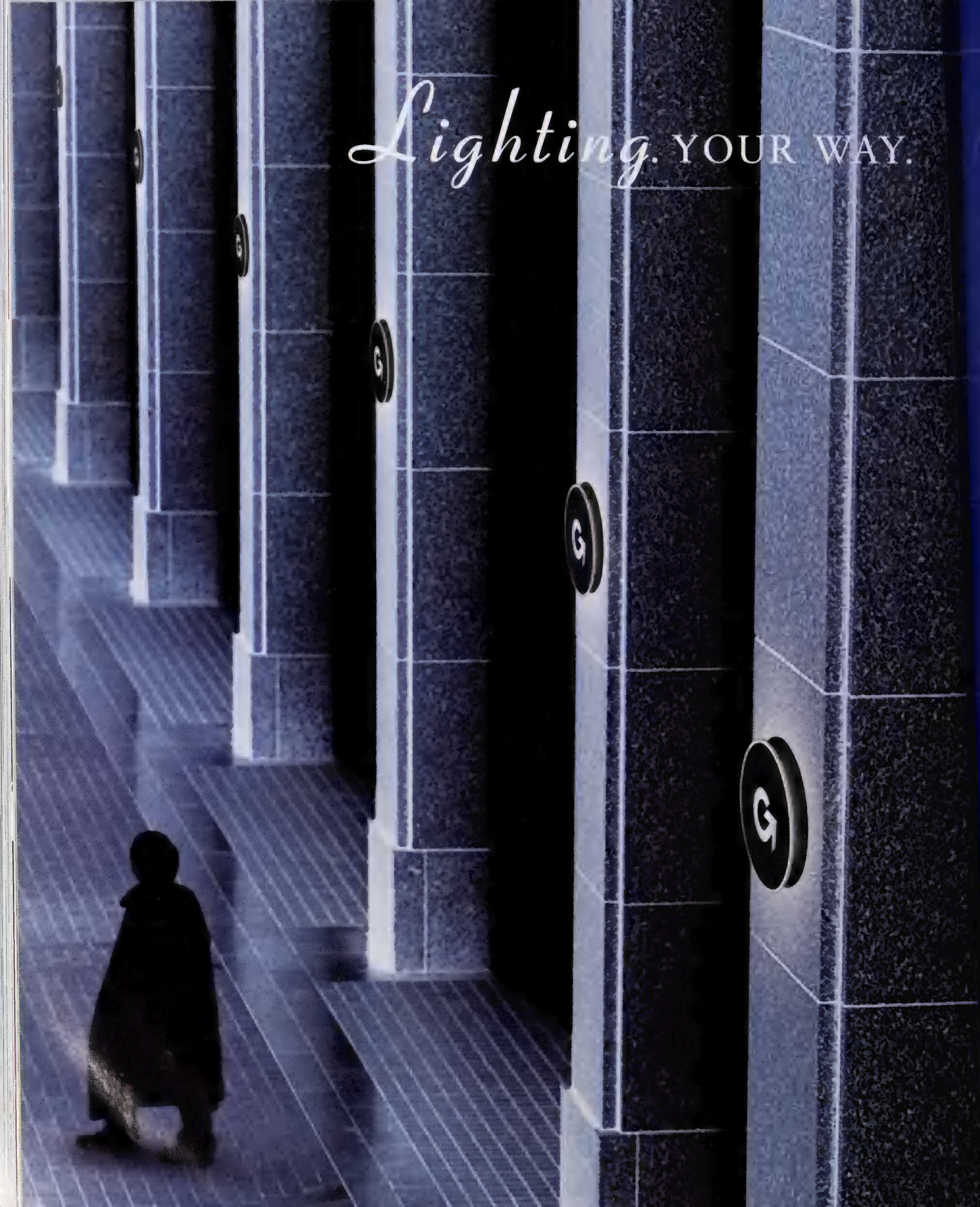
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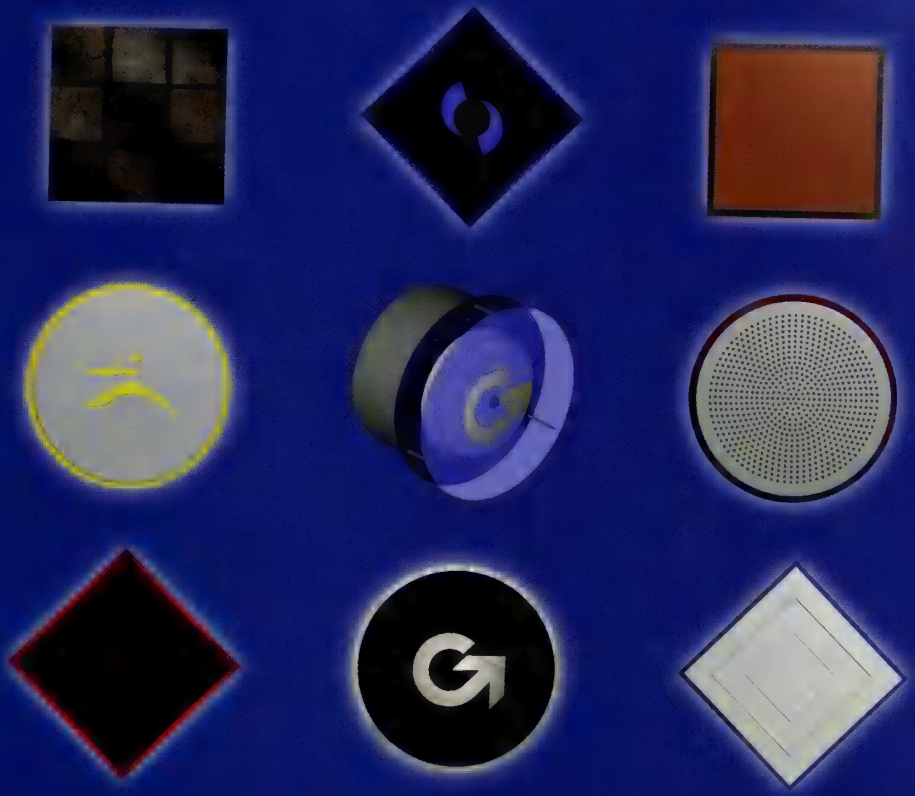

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Learning to Light

THE PATH TO A PROFESSIONAL CAREER IN ARCHITECTURAL LIGHTING DESIGN HAS BECOME A ROUTE BUILT ON FIRMER ACADEMIC FOUNDATIONS

By John Calhoun

More architecture professionals and academic institutions have begun to recognize architectural lighting as a valid, discrete discipline, not simply a service enhancing the grand design. In terms of education, there are more paths than ever leading toward a career as a lighting designer. Yet the upgraded standards don't mean that a consistent method of teaching lighting design has been codified. Degrees, programs, and emphases remain all over the map.

The classic educational models remain Pennsylvania State University and the University of Colorado, both of which offer degrees with a lighting specialty within their architectural engineering programs. There are a variety of degrees offered by other institutions, from a Master of Arts in Lighting Design at Parsons School of Design to a Master of Science in Lighting from Rensselaer Polytechnic Institute (RPI). And schools such as the Rhode Island School of Design, among others, offer sessions in lighting design as part of their technology and studio curriculum.

Beyond the university realm, manufacturers such as General Electric present in-house training for professionals and students. Web-based courses and programs are sponsored by the Illuminating Engineering Society of North America and the International Association of Lighting Designers (IALD). The Architectural Lighting Design Master Classes, a professional seminar, takes place this month (February 20–21) at John Jay College in New York City.

"The credibility that the lighting field has accrued was pushed by the generations before us, by professionals like Leslie Wheel and Howard Brandston," says Charles Israel, president of the IALD Education Trust Fund and principal of Lighting Design Alliance, an architectural lighting design firm. "They have trained architects to appreciate the value of good lighting design. The IALD's emphasis is to make students aware of the professional field of architectural lighting design. Lighting consultants may work on 5 percent of all architectural projects. Let's say we could double that to 10 percent. We don't have the depth of ranks to accomplish that. Where would we get all those designers to double our field? Clearly, there is a huge need for better lighting education.

"The IALD is also trying to push lighting design versus illumination engineering," continues Israel, who teaches advanced lighting at the University of Southern California School of Architecture, Los Angeles, as part of the Master of Building Science program. "Some programs provide great technical background but not really the design aspect."

Parsons School of Design, New York City

Parsons, on the other hand, stresses design. As an accredited degree, the M.A. in Lighting Design goes back 18 years, though it grew out of classes first taught at the school by Jim Nuckolls, author of the groundbreaking textbook *Interior Lighting for Environmental Designers*. "As far as I know, we're the oldest program in lighting design," says director JoAnne Lindsley, past president of IALD and a Parsons alumna, of the three-semester course of study. Requirements include studio plus courses in lighting principles and daylighting. The philosophical core of the program is a two-semester course, "Light, Perception, and Culture," which emphasizes the history, aesthetics, and psychology of lighting.

"We see light as having a critical role in social formations and in the way the built environment is qualified," says Peter Wheelwright, chair of the Parsons Department of Architecture. The department, founded in 1991 to further refine Parsons' environmental design offerings, grew to incorporate the M.A. programs in lighting and interior design, with the goal of establishing an interprogrammatic field of study.

The road has been bumpy. "There is not a lot of theory underlying [the lighting discipline], and it hasn't cohered into an academic formulation," says Wheelwright. "A cultural perception persists, particularly in higher levels of architecture, that lighting is a service discipline; architects tend to think of lighting designers as technicians." Lindsley adds, "Lighting hasn't entered the perception of many architecture schools." To counter this view, Parsons is working to consolidate the curriculum and attract interest and funding from government and industry.

Rensselaer Polytechnic Institute, Troy, New York

Up the Hudson River from Manhattan, RPI indeed offers a very different kind of lighting education from the Parsons program. The two-year M.S. degree in Lighting, offered by the School of Architecture, is highly concentrated on the technology of light. "Other degrees in lighting tend to be architectural engineering degrees with a concentration in illumination," says Daniel Frering, manager of education at the RPI-affiliated Lighting Research Center, which has been running the M.S. program since 1989. "Our degree is 48 credits, all in the field of lighting."

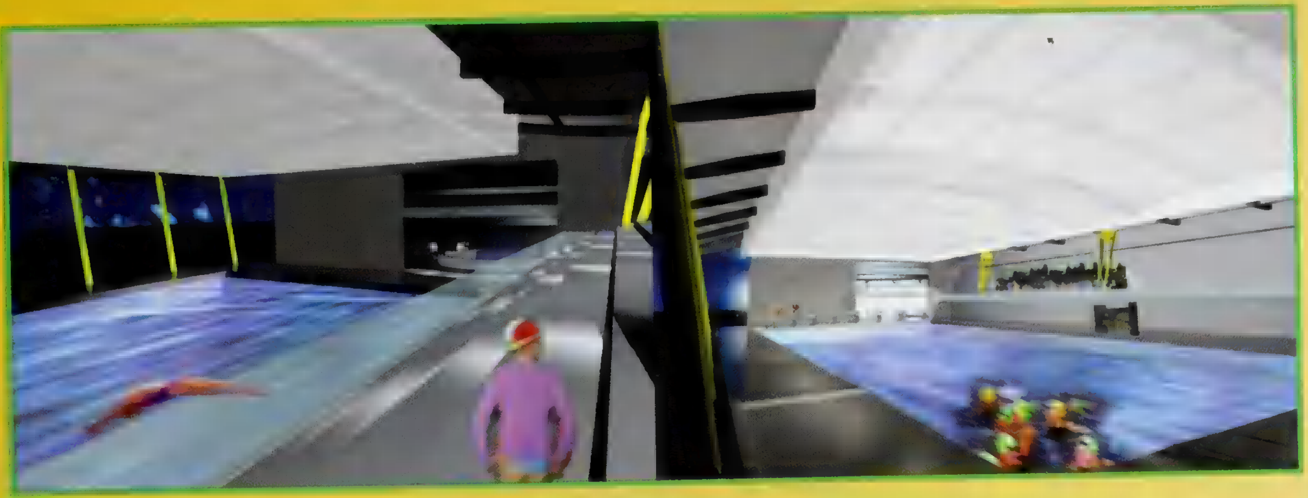
Research dollars—about $4 million a year—drive the program. Students are awarded research assistantships, which pay all or part of their tuition. "We feel that the students learn 50 percent in the classroom and the other half working directly on projects with faculty," says Frering. RPI accepts 10 or 12 M.S. lighting candidates per year, as opposed to the 30 to 40 enrolled in the Parsons program. RPI students come from disciplines including architecture, engineering, art, and interior design. Frering estimates that half of the program graduates go on to work in lighting design.

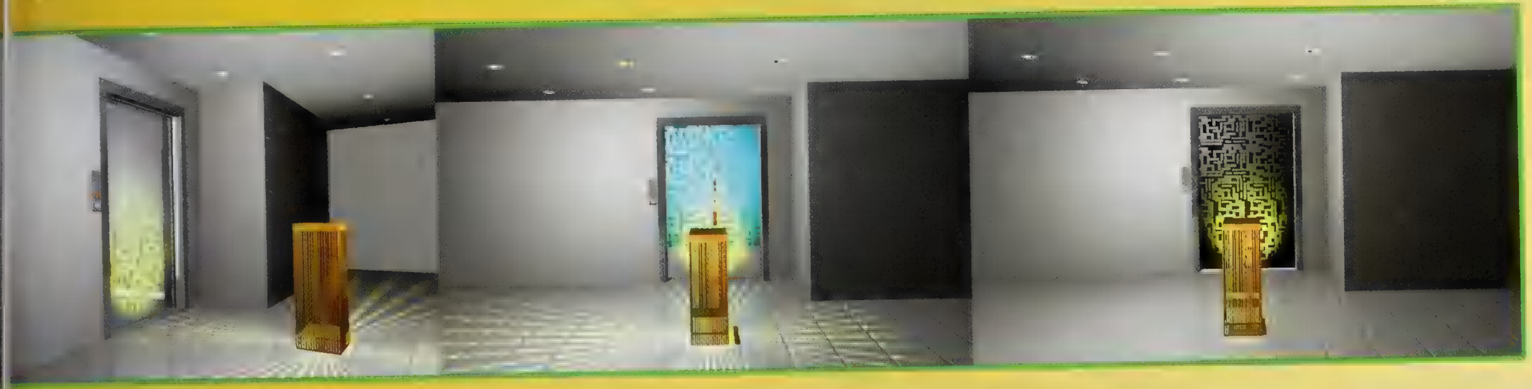
University of Colorado, Boulder

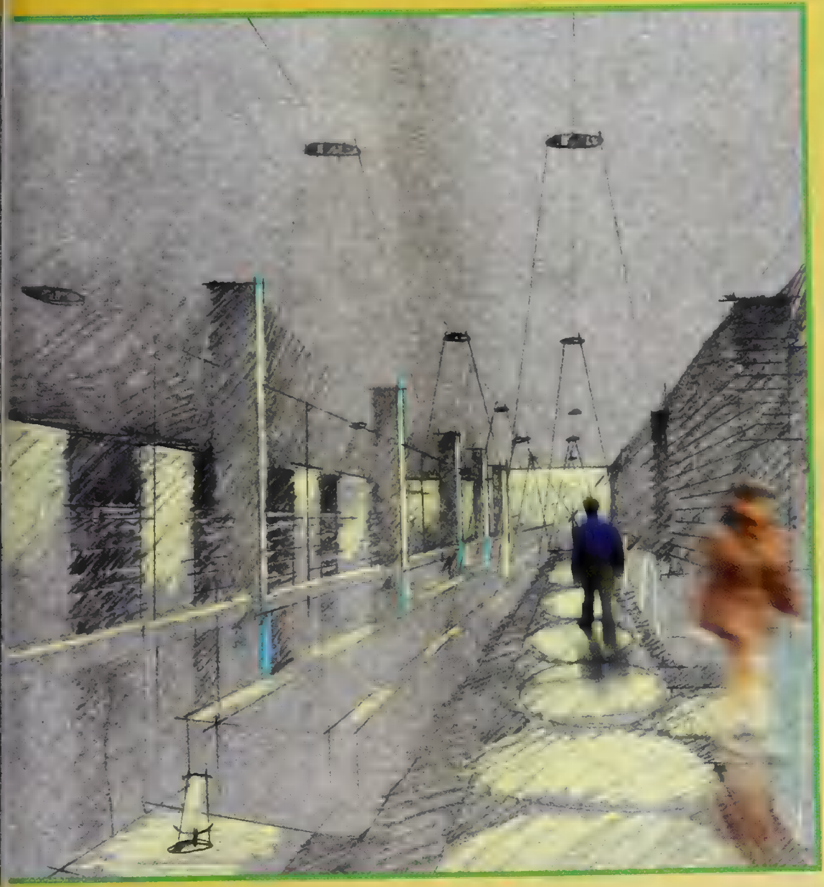
"The degree that we grant at the University of Colorado is a Bachelor of Science in Architectural Engineering, and lighting is one of the specialties," says David DiLaura, senior instructor since 1980. By their junior

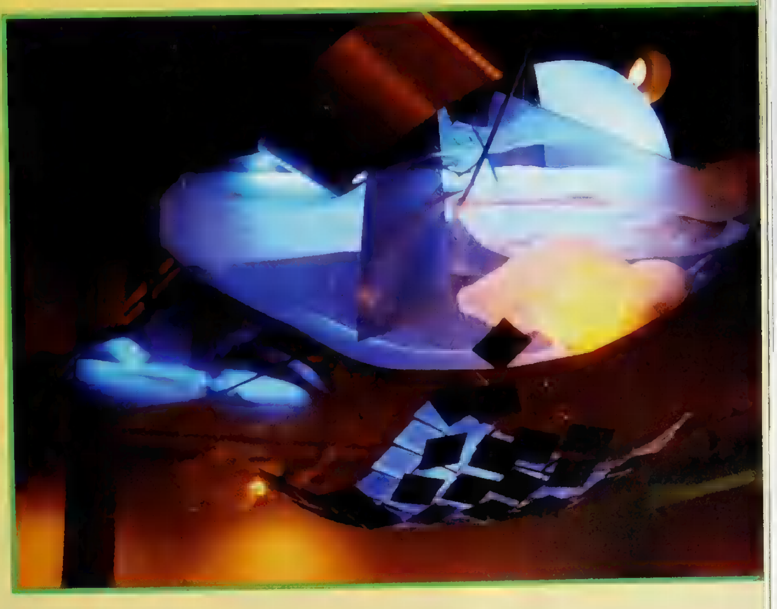
John Calhoun is a freelance writer based in New York City who frequently writes about lighting and cinema design.

RENDERINGS: COURTESY PARSONS

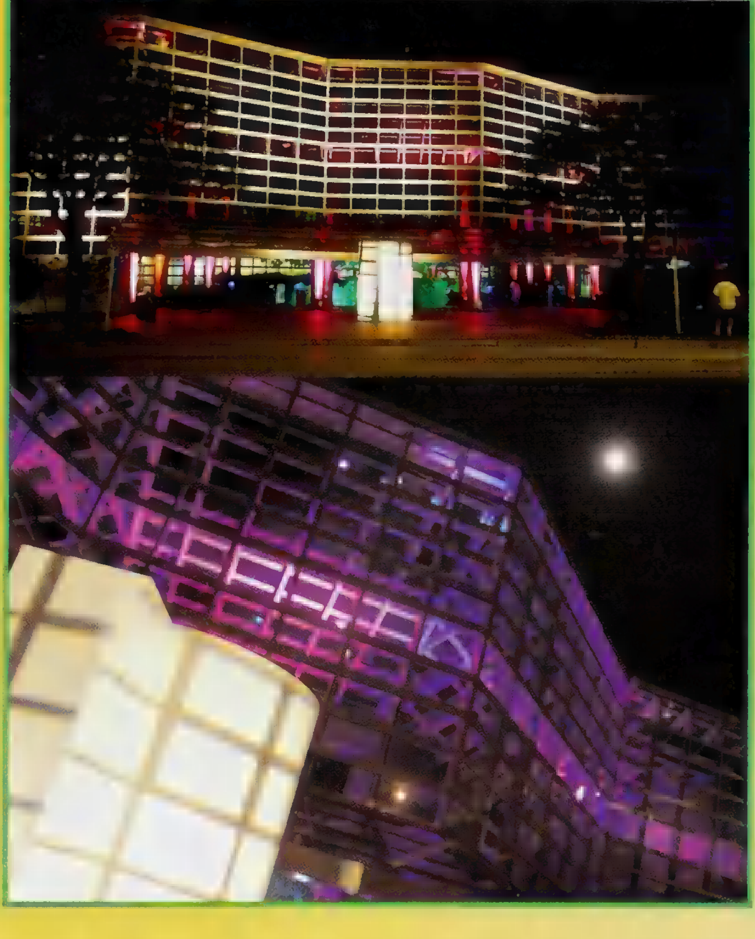








The Parsons M.A. program stresses design above illumination engineering technology. Among recent work presented by students (clockwise, from top): Two views of an interior swimming pool, with lighting by Conor Sampson, a 2002 graduate; a series of studies for an elevator lobby with a kinetic light sculpture by the team of Li-Wei Lu, Tim Milton, and Chuenjai Nuttamun; an ethereal lighting fixture created by Won-Keun Han; and another rendering by Sampson for the subdued lighting of a law school gallery.



At Texas Christian University, Fort Worth, a grant from High End Systems supporting the school's Lighting Designer in Residence Program allowed Anne Militello of Vortex Lighting to visit campus. After a week of seminars, the students implemented lighting using 21 automated luminaires within the atrium of the Tucker Technology Center. Three fixtures were affixed with rotating gobos to produce dazzling light patterns.

year, students in the four-year program declare an emphasis: Besides lighting, they can choose structures, solar and renewable energy, or HVAC. Nine lighting courses are offered, and lighting specialists are encouraged to take relevant classes in theater and physics. Some engineering-minded students remain to earn an M.S. degree.

It's a highly technical education, but DiLaura, who was instrumental in creating the National Council on Qualifications for the Lighting Professions' Lighting Certification exam, says, "We're committed to broadly educating our students in lighting. I'm known for writing computer programs in mathematics, and when I started, everyone thought, 'He's just going to train engineers, in the worst sense of the word: 24-karat, broken-eyeglass, pocket-protected nincompoops.' Most of our students end up either working for lighting designers or for architectural engineering firms that do lighting as part of their service to architects."

Texas Christian University, Fort Worth

Lighting education is structured somewhat differently at Texas Christian University. With the help of a grant from the Nuckolls Fund, TCU's Department of Design, Merchandising & Textiles has offered a lighting minor since 1998. All interior design students take a core lighting course, while lighting minors take six more. "We're the undergraduate version of the program at Parsons, and quite philosophically different from the program in engineering at Colorado," says Fred Oberkircher, TCU lighting faculty member and past president of the IALD Education Trust. "We're heavy on design, and probably light on calculations."

Oberkircher knows firsthand how scant lighting training has been within architecture programs. "I'm a Penn State grad, but from the architecture side," he says. "When I went there 35 years ago, my one-half of one course in lighting was the same one-half of one course that they offer now. Yet there is a world-class lighting program in the next building, in architectural engineering, and they haven't taken advantage of it."

University of Nebraska, Omaha

The country's newest lighting-specialty degree is at the University of Nebraska, in the four-year-old architectural engineering program. The university offers a five-year course of study, granting students a B.S. in engineering after four years and an M.S. after five. An area of specialization is declared after the third year. Currently there are nine lighting students, but assistant professor Kevin Houser says he hopes the number will rise to 20 or so. The school has three Ph.D. candidates in lighting.

Establishing architectural engineering at the university resulted from a targeted business call in Nebraska; $70 million in funding came from the state and industry. The lighting emphasis and lab at the new Peter Kiewit Institute was made possible in part by a grant from the Nuckolls Fund, and Houser lured fellow faculty members Clarence Waters and Dale Tiller from Kansas State and Canada's National Research Council, respectively.

Strength in growing numbers, a deeper pool of mentors

"There are very few tenure-track professionals who have ever done lighting design, who have day-to-day experience," notes Israel, identifying a challenge to the future of lighting education. "You can't have students until you have good programs; you can't have good programs until you have good instructors. With everyone requiring Ph.D.s to teach, it's tough for designers to get that level of accreditation. The only way to get instructors currently is to steal them from established programs."

"Within many programs in interior design or architecture, a single requisite course in lighting is taught," DiLaura says. "To get serious about lighting, there must be a sequence that lasts several years at least. The support for that has been all but absent and requires a long-term commitment by a host institution. That's getting difficult, because higher education is funded by huge engines of technology, which our industry lacks. The birth of the Nebraska program is a very uncommon activity, and it's an interesting development to watch." ■

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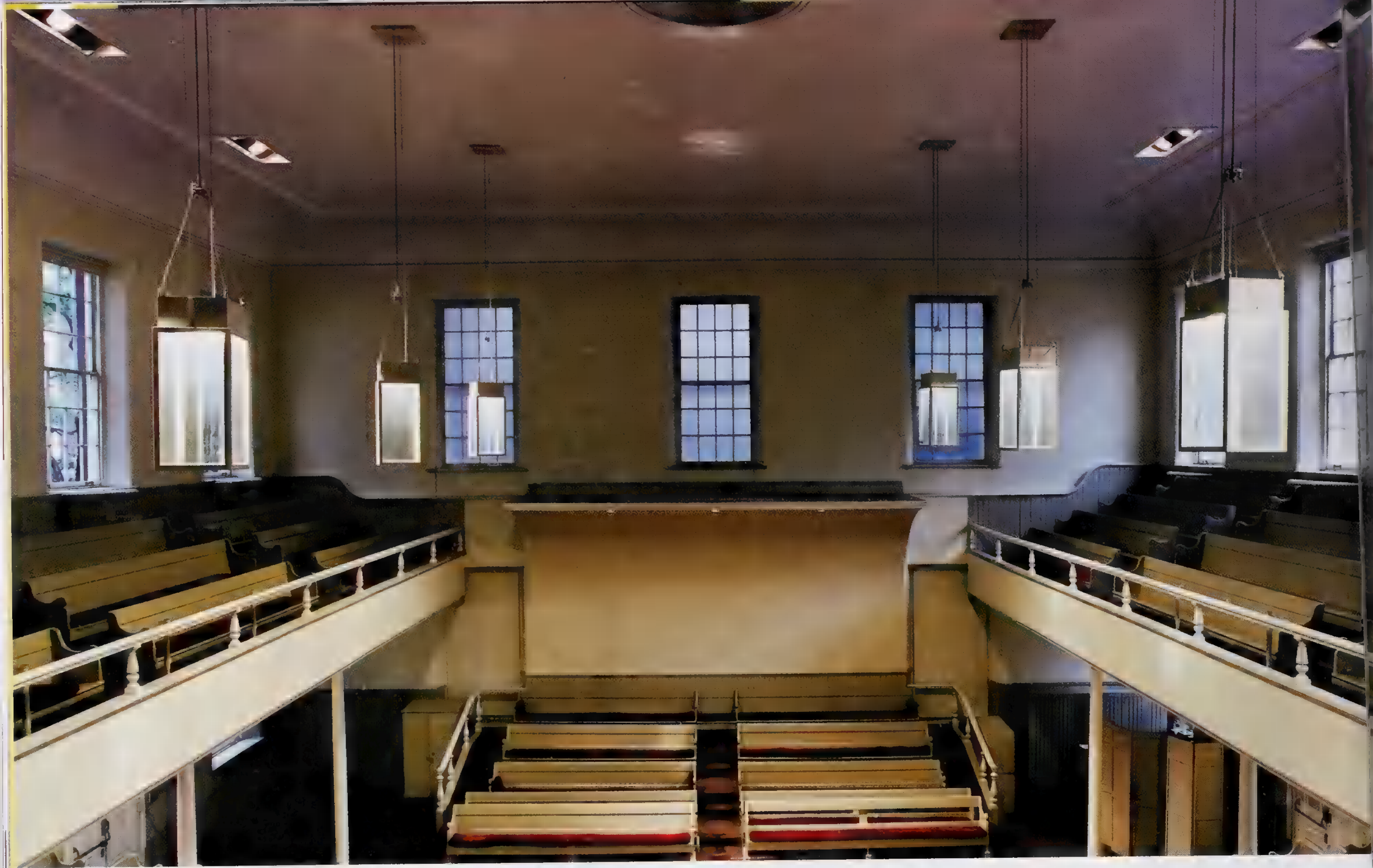
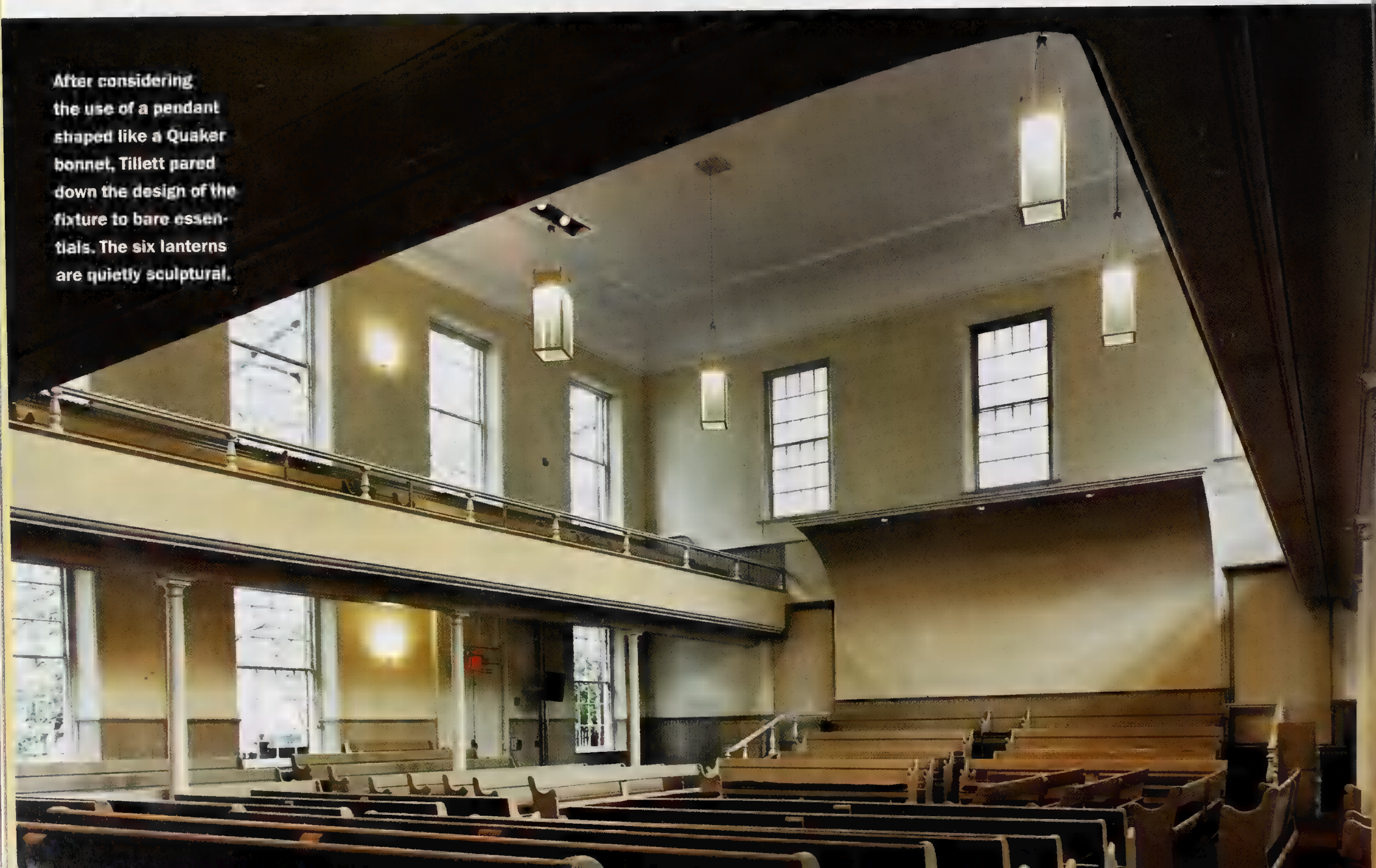




After considering the use of a pendant shaped like a Quaker bonnet, Tillett pared down the design of the fixture to bare essentials. The six lanterns are quietly sculptural.

With new lighting, the historic **Friends Meeting House** in Manhattan achieves beauty in simplicity

By William Weathersby, Jr.

Stuyvesant Square Park is a swatch of Manhattan whose historic fabric remains firm. Once part of Governor Peter Stuyvesant's plantation, or "bouwerie," the area surrounding the square at East 15th Street near Second Avenue was settled in 1836 after Stuyvesant's great-great-grandson, Peter Gerard Stuyvesant, deeded the land to the city. Today, two distinctive buildings dominate Rutherford Place, which forms the western border of the park: the 1856 St. George's Episcopal Church (where J.P. Morgan worshiped) and the Friends Meeting House, a Greek Revival building constructed five years later for a Quaker congregation, the Religious Society of Friends.

Elegantly restrained, the redbrick Friends Meeting House was built by Charles T. Bunting, a member of the meeting who is also thought to have designed the structure. Largely a silent practice without a formal sermon, physical or institutional hierarchy, or visual focal point, the Quaker worship ritual centers around reflective meditation and commentary shared by individuals, with the congregation seated in four sections of pews facing each other in a spare, nearly square room ringed with tall windows. More than 140 years later, the Friends still adhere to the same democratic assembly, but the uses of their main meeting room have blossomed. The 56-by-64-foot room serves additionally as a place of worship for a congregation of Mennonites, a classroom for the on-site Friends Seminary for schoolchildren, a community performance and events venue, and a resource space for an affiliated homeless shelter.

With ongoing architectural restoration under way to preserve the building's wood pedimented porch and double-hung windows with original glazing, the Friends decided to upgrade interior lighting to reflect the meeting house's many contemporary functions.

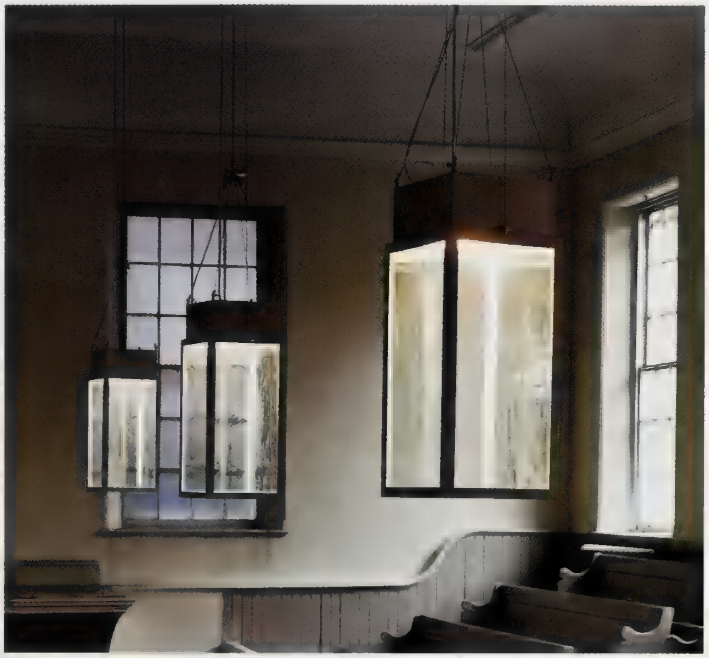
"For Quakers, light is a metaphor for divine inner light," explains administrator Nancy Hadley-Jaffe. "A central tenet is 'light comes from within us, rather than outside us,' so lighting is an important aspect of maintaining the sense of a sacred space."

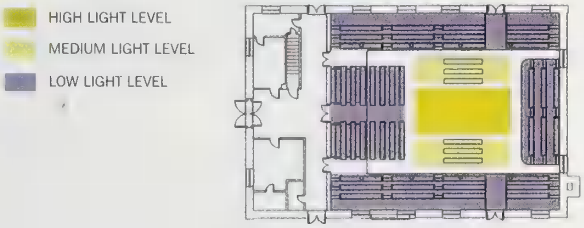
To orchestrate subdued yet efficient lighting, Tillett Lighting Design focused on the Quaker virtues of "simplicity and frugality," says principal lighting designer Linnaea Tillett. "The new lighting needed to enhance the Friends' own meetings, yet there is so much activity taking place in this one room throughout the week that flexibility, ease of use, and energy efficiency were priorities."

Tillett, who holds a doctorate in environmental psychology, met with the meeting house's many constituencies—from Gospel singers and grade-school musicians to members who have worshiped here for decades—then devised lighting plans and presets for multiple functions.

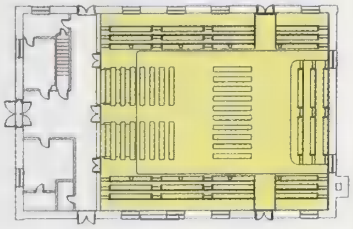
For ambient lighting, spare pendants find beauty in simplicity. Six brushed-metal lanterns painted dove gray are fitted with restoration glass to reference the traditional lines of the room's tall windows.

Contributing editor William Weathersby, Jr., is a freelance writer based in Manhattan. He edits the lighting and interiors special sections of RECORD.

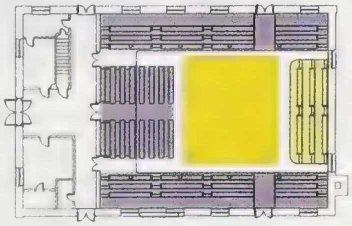




MANHATTAN MENNONITE FELLOWSHIP



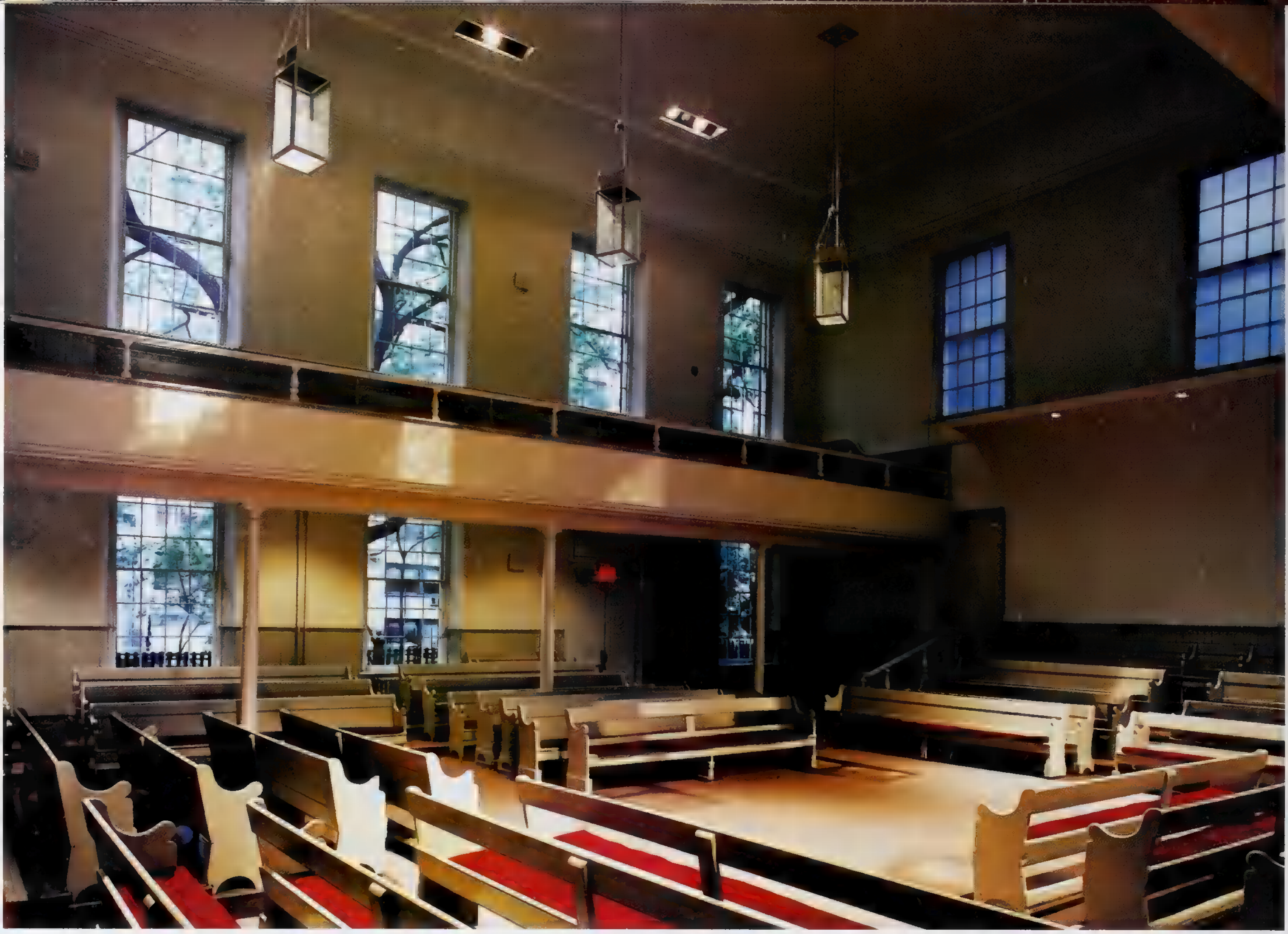
QUAKER MEETING FOR WORSHIP



FRIENDS SCHOOL PERFORMING ARTS

The Friends Meeting House is a center of community activity; Tillett mapped out lighting presets (right) for versatility. Spare custom pendants (above and opposite) complement the austere lines of the meeting space's 19th-century window mullions and glazing.

PHOTOGRAPHY: © ELLIOTT KAUFMAN



Recessed ceiling troughs house PAR56 luminaires that support performance requirements (top). Additional MR16 pinspots add ambient light and spotlighting. Sconces were stripped of detail for a spare look (above).

Dimmable compact fluorescents permit warm, concealed light sources that complement daylight. The lack of any visible lamp source and the use of restoration glass allows worshipers a view through the fixtures to the windows and landscape beyond. The pendants are on individual motorized controls so they can be lowered for maintenance.

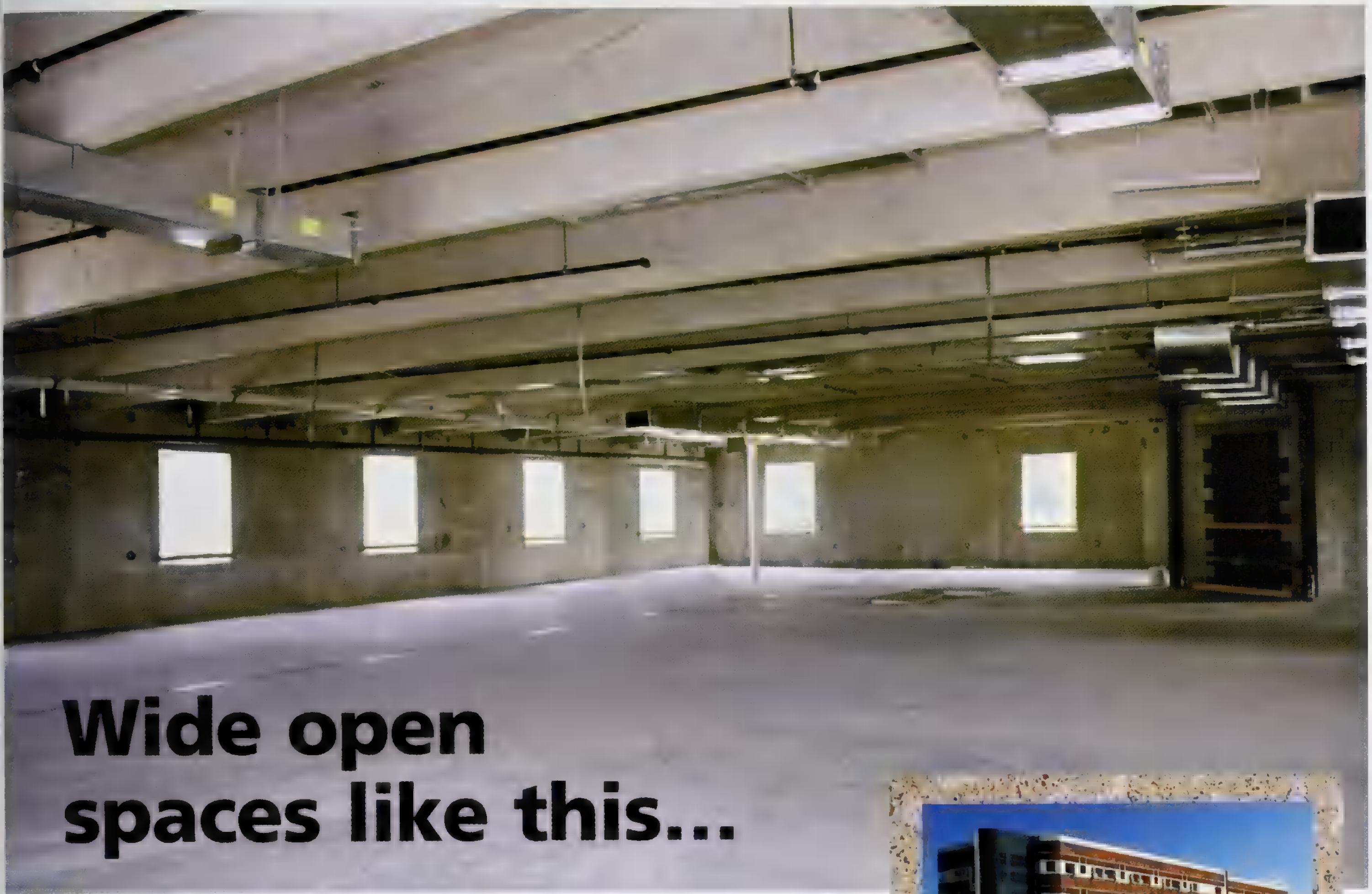
Sconces were a modification of an existing fixture design. Tillett made the fixtures more austere by removing any detailing and adjusted their size to reflect the scale of the space. They use 42-watt biaxial lamps.

Recessed slots in the ceiling house a trough system fitted with 500-watt PAR56 lamps. Theatrical lights can be operated either from a local preset Lutron system or from a theatrical panel. Additional MR16s provide ambient downlighting. "We locked in energy-efficient, all-fluorescent lighting presets for everyday use," Tillett says. "More sophisticated programs, such as nighttime performances, integrate incandescent sources for a more intimate ambience." ■

Project: *Friends Meeting House, New York City*
Lighting designer: *Tillett Lighting Design—Linnaea Tillett, principal designer; Kate Gardner, Voravanna Tonkul, project team*
General contractor: *Fifty Three Restorations*
Electrical engineer: *Atkinson Koven Feinberg Engineers*

Sources
Pendants: *Aurora Lampworks*
Downlights: *Iris*
Task lighting: *Altman Stage Lighting*
Sconces: *Baldinger*

www For more information on the people and products involved in this project, go to Lighting at **architecturalrecord.com**.



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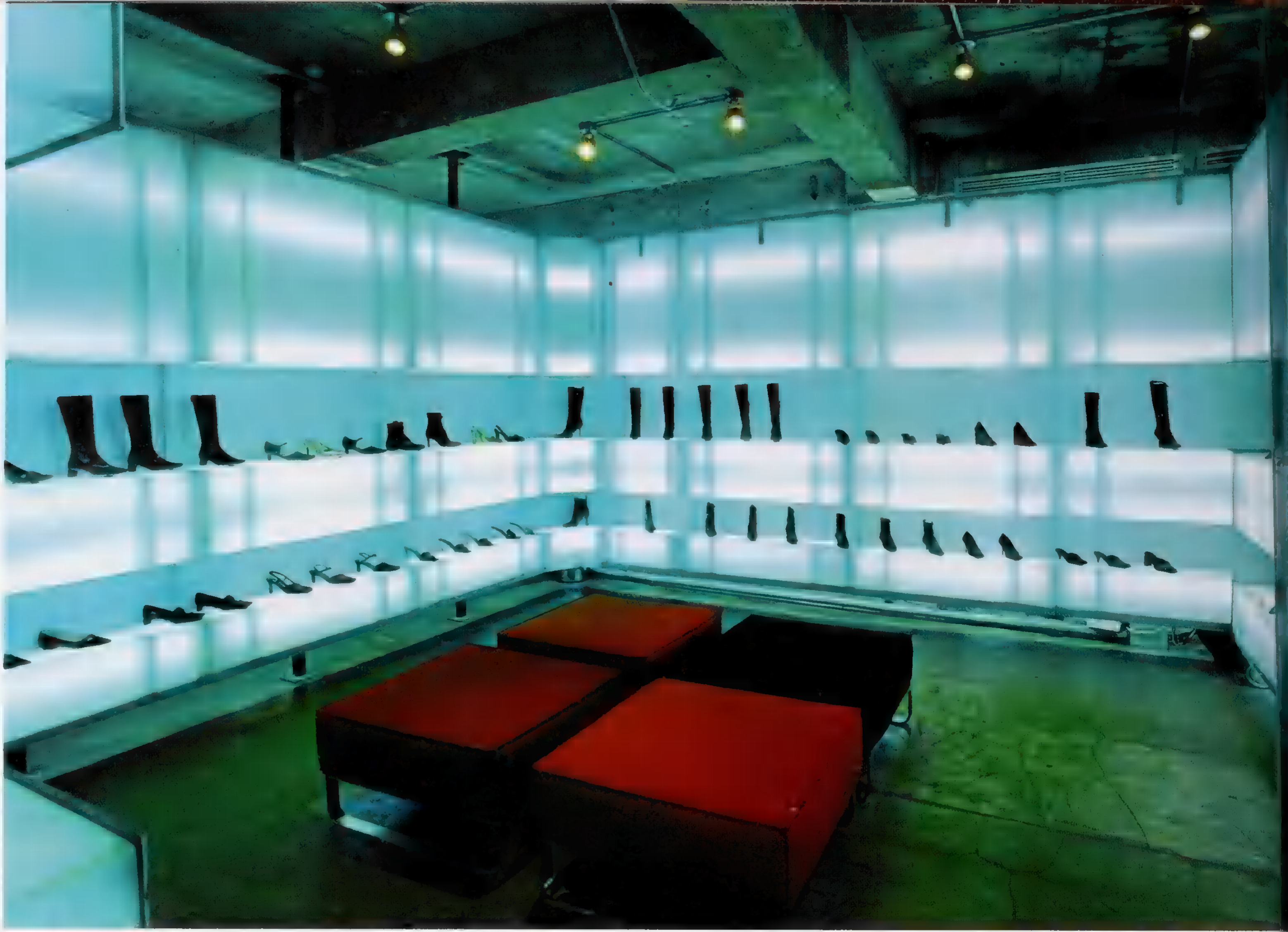


PHOTOGRAPHY: © KYUNTAE KIM

Architects LOT/EK bring a **Boon** to shopping in Seoul with a landscape of light boxes infused with color

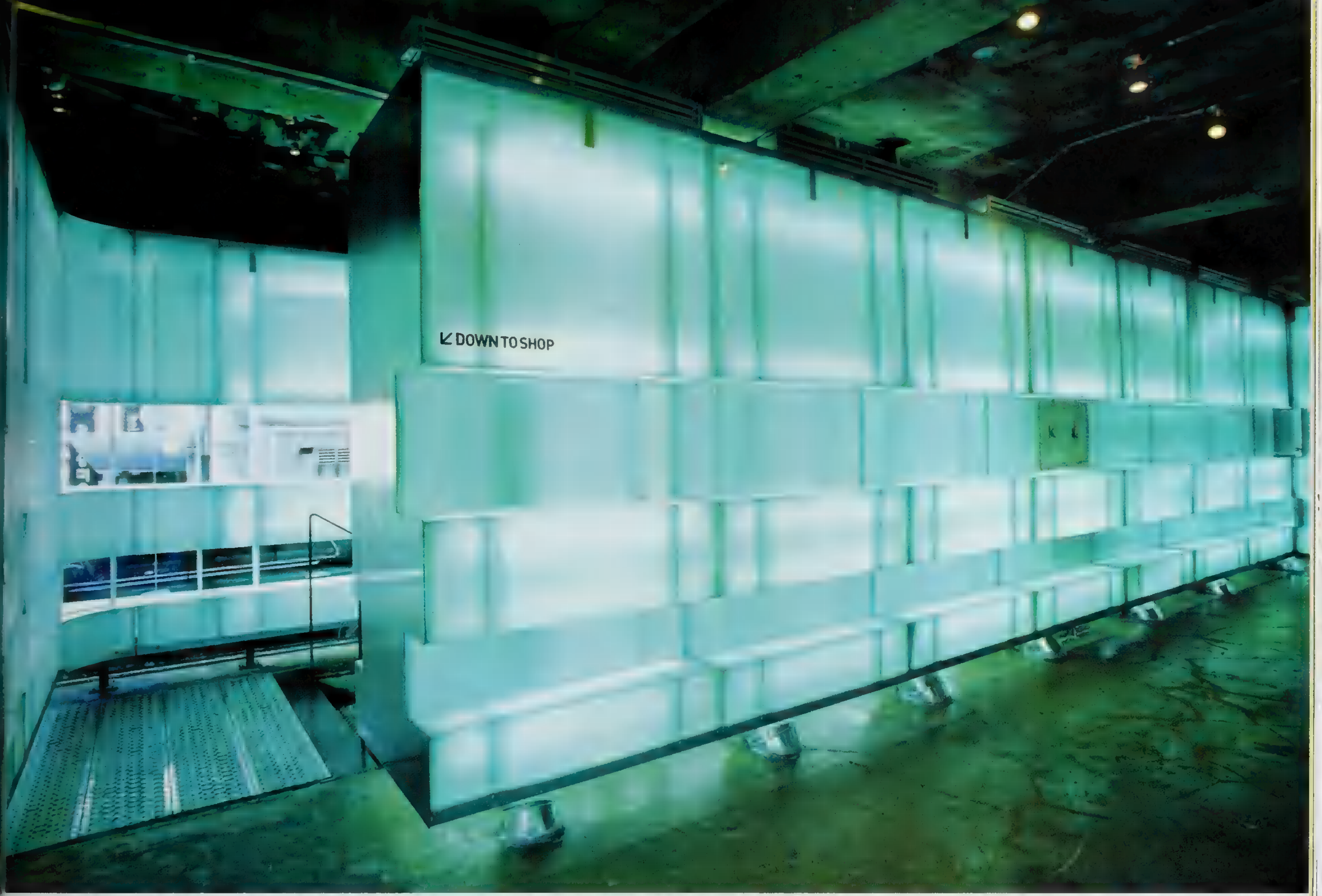
By Leanne B. French

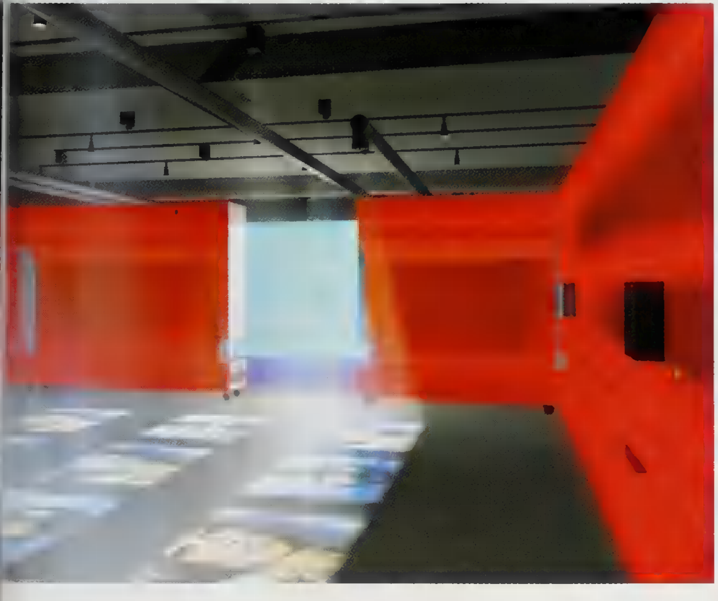
When Boon, the largest fashion franchiser in Seoul, South Korea, decided to corner the market on new talent and compete with the fashionistas in Tokyo and Hong Kong, the strategy was to open a showroom and retail store that would be just as compelling as the fashion designs on display. The owner looked to the U.S. for an edge and an architecture firm to push fashion forward. "They wanted to create a store that was very New York City urban in feeling, a cross between an art gallery and clothing store," says architect Giuseppe Lignano, principal with partner Ada Toller in the Manhattan-based firm LOT/EK (pronounced "low tech").

Both transplants to New York from Naples, Italy, Lignano and Toller are alumni of the Columbia University Graduate School of Architecture, where they became interested in mining the city for ideas as well as materials. The firm has been recognized for its imaginative transformations of salvaged industrial parts. The architects have turned TV monitors into light sources, detergent bottles into lamps, and have made industrial shipping containers a signature. Recently, the duo masterminded a system of movable shipping containers to enliven an exhibition space for the Bohen Foundation in New York's West Village.

Translating this urban attitude and eye for innovation to the showroom in Seoul began with finding a two-level facility that could accommodate a gallery and showroom upstairs and retail area below. A 10,000-square-foot sportswear store was the site waiting to be overhauled. "The existing interior was entirely Sheetrocked and had a typically bland retail feeling," says Lignano. "At our first meeting we punched holes in the Sheetrock and realized that underneath was actually a beautiful concrete structure." The client favored a rougher, warehouselike environment, so LOT/EK chose to expose the concrete walls, floor, and ceiling, returning the shell to its raw, untreated concrete finish.

Leanne B. French is a freelance writer and a documentary filmmaker based in Manhattan. She frequently contributes to RECORD*'s special lighting section.*





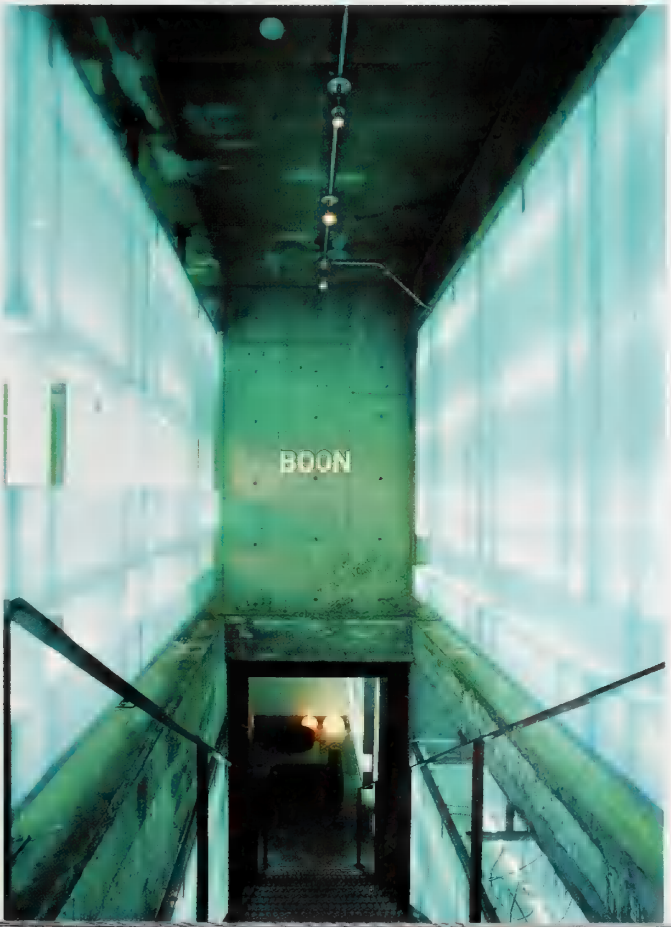
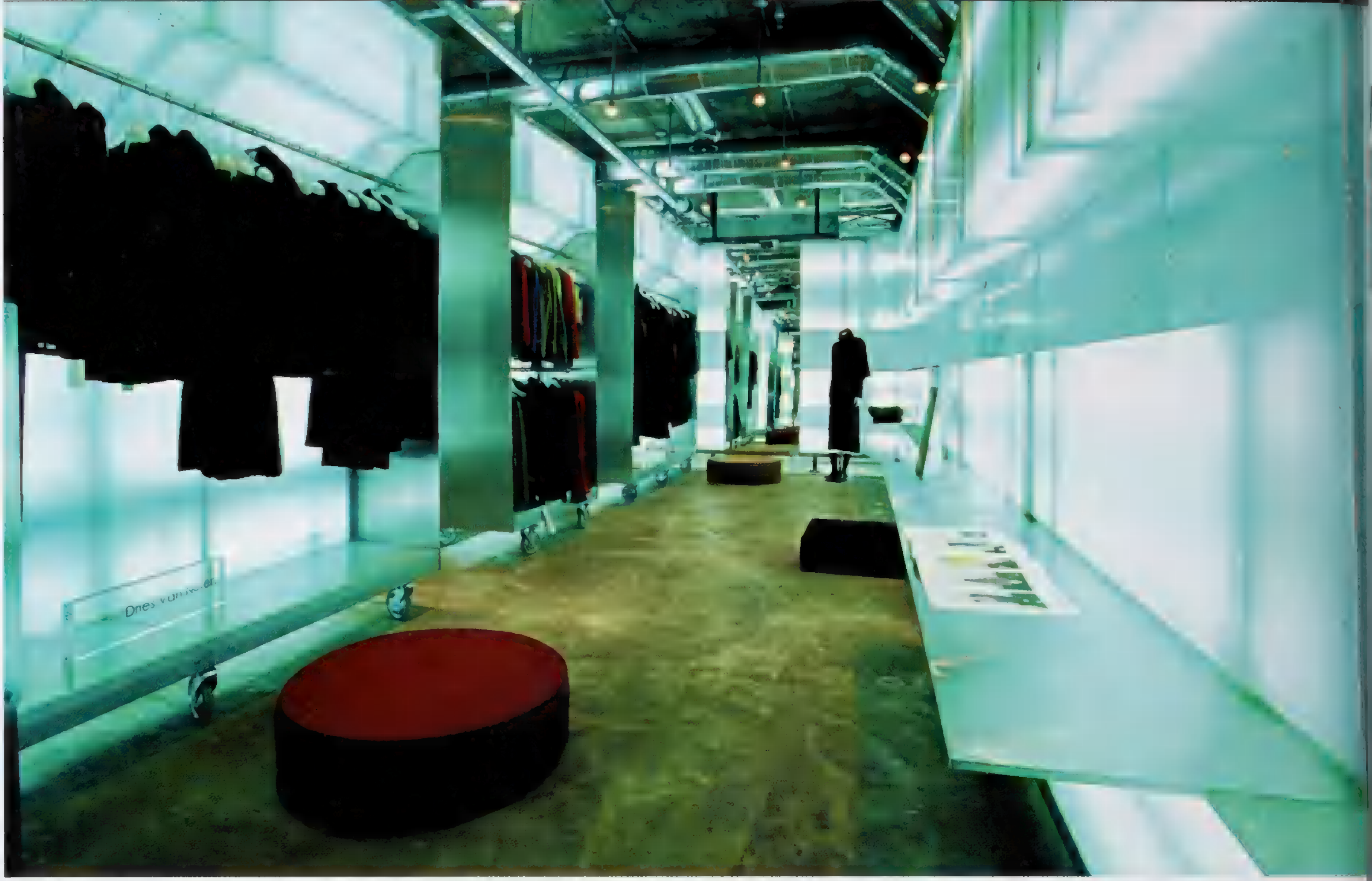


Photo and video projections add another layer of lighting to the Boon showroom (above). The movable translucent panels can be reconfigured to enclose specialty fashion vignettes (top and opposite). Stair treads of perforated metal filled with resin cast pinholes of light downstairs (right).



The empty structure was deep and narrow with minimal windows, so illumination became a crucial element of the interior design. The architects devised a floating wall system of fluorescent-illuminated, translucent panels to define space and either hide or reveal air and heating ducts and structural elements. The floating fluorescent "ribbon" displays clothing and accessories in the front of the showroom and functions as an unadorned lighting source and visual focus toward the rear. "The band of translucent panels is on castors and continues around the vertical plane without touching the floor or ceiling," explains Lignano. "Essentially, we created a gap between the existing concrete wall and the panels so that we could light them from the back."

Five fluorescent tubes are placed behind each translucent fiberglass panel supported by steel pipe frames. The fiberglass has a slight blue-green tint at the base and acts as a filter for the fluorescent lighting. "The quality of fluorescent light can be very harsh, but we experimented with the color rendering of the panels," Lignano says. "As long as you filter the light with some other color or texture, it can become quite beautiful." The fluorescents also offered the possibility of changing the color of the entire space or a specific zone by simply wrapping gels around the tubes.

LIKE A KIT OF MOVABLE PARTS, THE PANELS CAN BE ROLLED ALONG THE CONCRETE FLOOR TO ENCLOSE SPACE.

While fluorescents make the space appear to glow and provide general illumination, halogen PAR lamps installed in the electrical boxes along the ceiling create museum-style illumination for spotlighting mannequins and special displays. The fluorescent wall system is carried

Within the stark concrete shell, all interior elements are modular. The light-box panels are not connected to either the perimeter walls or ceiling and seem to float like a ribbon of light through the long, narrow space. In-store staff can adapt the units to serve as clothing display niches or room dividers.

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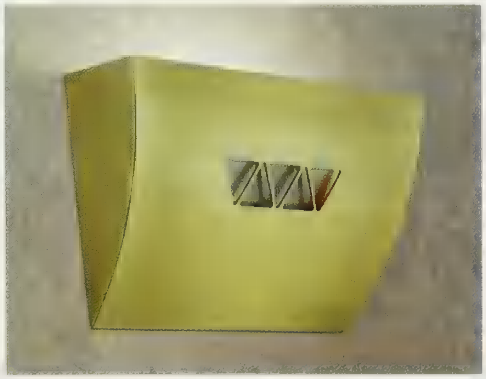

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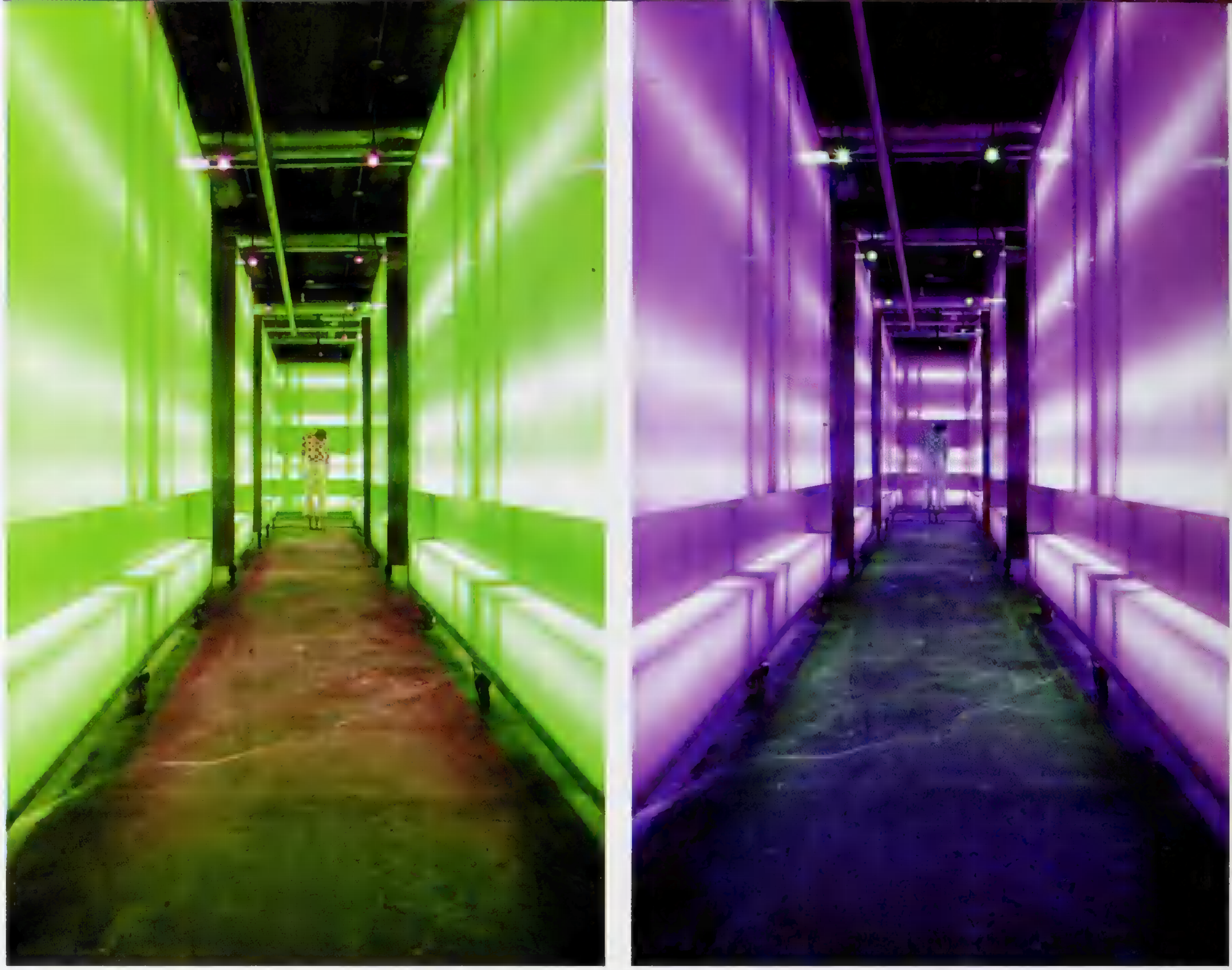

Fitted with color gels, the fluorescents can transform the ambience of the showroom and retail space. Some areas are often left bare to appear like an art installation.

through in the 4,000-square-foot gallery and shoe department, and the 6,000-square-foot lower-level retail space, lounge, and café.

One of the client's concerns was the flexibility and ease of modifying the enclosures of the space, an issue LOT/EK addressed with its modular panel design. Fitted with castors, the panels are contoured to accept indentations that create two bands. The indentations serve two purposes: to accommodate hanging display shelves and to function as the female niche to the male counterpart of another panel.

A RIBBON OF TRANSLUCENT PANELS ILLUMINATED BY COLORED FLUORESCENTS THREADS THROUGH THE FASHION HOUSE.

Panels are cut out around storefront windows at street level to allow visibility into and out of the store. The fluorescent lighting filters minimal daylight from the windows. Stairs leading down to the retail space are made from perforated metal panels filled with resin, a material that extends the warmth of the light downward.

The lower-level retail space is divided into four vignettes, accommodating displays for four to six fashion designers. Service and amenity areas include a lounge, fitting rooms, and storage space.

Located off the main retail corridor of Seoul and around the corner from traditional department stores like the Galleria, Boon is bringing new fashion trends and a new kind of shopping experience to the fringe of the New Town district. "The neighborhood is reminiscent of New York City's SoHo or NoLita areas," says Lignano, referring to his home city, which inspired this Asian outpost. "It's chic and trendy, the place to introduce new ideas to Korean fashion." ■

Project: *Boon, Seoul, South Korea*
Owner: *Shinsegae International*
Architect, lighting designer: *LOT/EK—Ada Tolla, Giuseppe Lignano, partners*
General contractor, engineering consultant: *Kesson Construction*
Computer rendering: *John Hartman, Thomas Chirouse*

Sources
Fluorescents: *Phillips Lighting*

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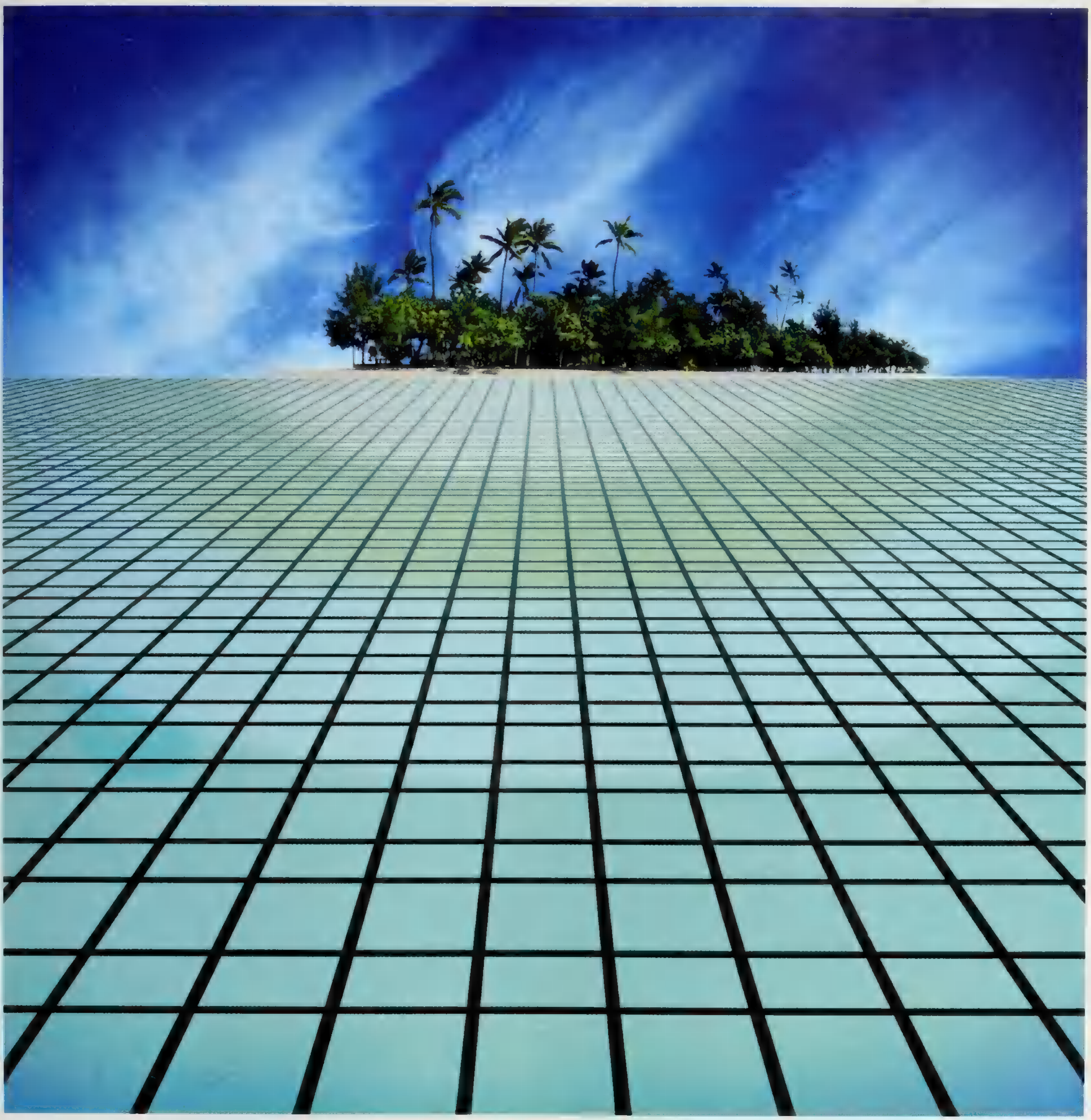

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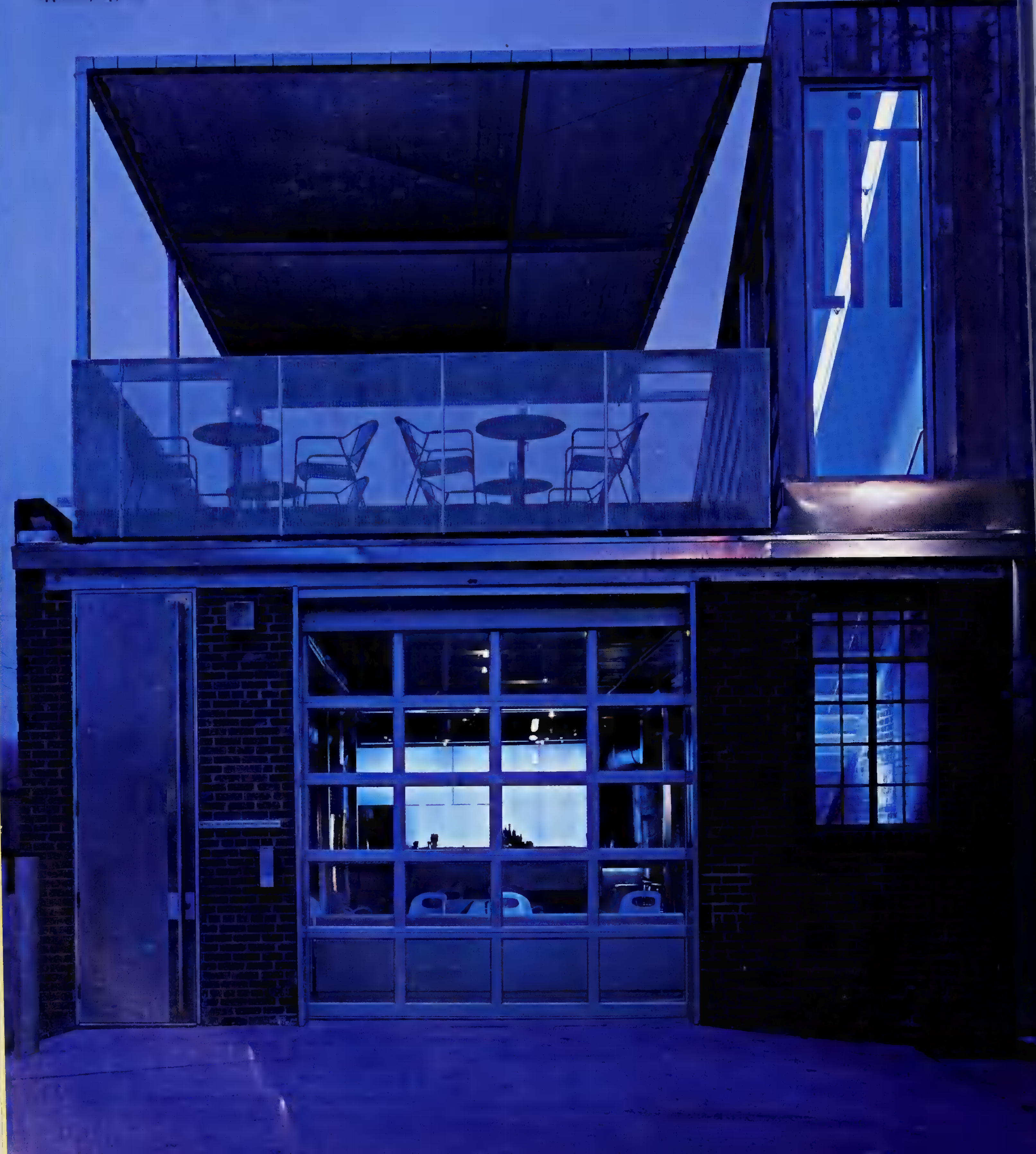
Perforated metal stairs and guardrails leading to a roof deck are lit with colored fluorescents (this page and opposite, top). The deck, overlooking a plaza and stadium, was added to the building. Lounges at LiT (opposite, bottom) change hues seasonally.



Elliott + Associates captures **LiT** in a former warehouse reborn as an edgy art gallery and watering hole

By Leanne B. French

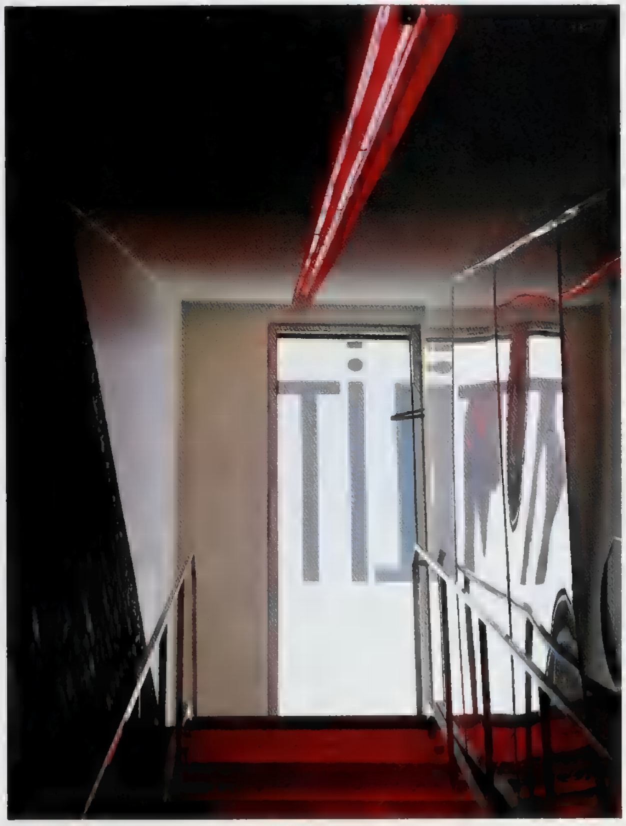
Bricktown, as its name suggests, is an industrial district in Oklahoma City lined with redbrick warehouses that over the years have stored everything from munitions to mufflers. More recently, a city initiative has funded public-improvement projects, including the refurbishment of a scenic waterway, so that tourism is taking root where industry has vanished. It was the allure of the area's industrial past, however, that most inspired architect and lighting designer Elliott + Associates to design LiT (pronounced "light"), an edgy new art gallery and bar on the outskirts of the evolving neighborhood.

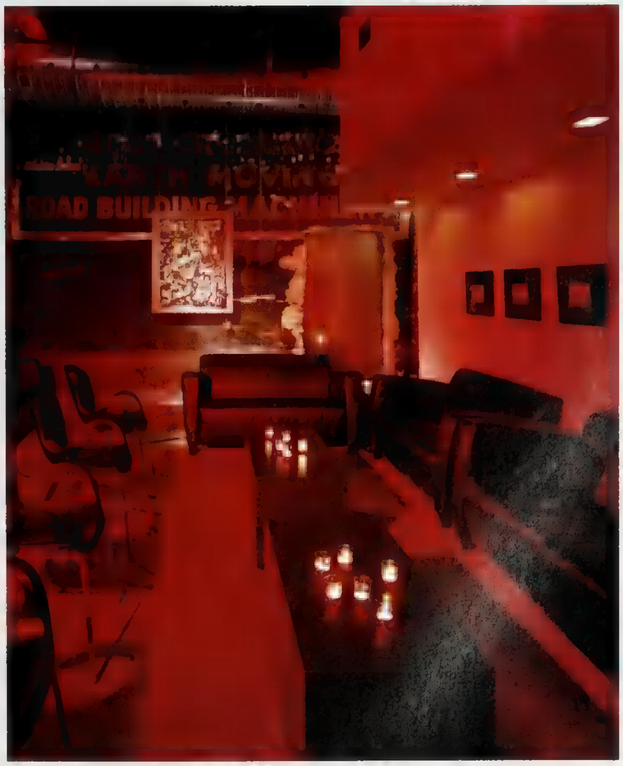
LiT's quartet of owners, enterprising medical students moonlighting as entrepreneurs, were not interested in creating simply another tourist draw, but rather a neighborhood spot that would attract a "see and be seen" clientele of regular patrons. Principal architect Rand Elliott, FAIA, took an "archaeological approach" to the quirky 25-foot-wide-by-120-foot-long industrial building, formerly the Corkan Pump Company, that they had rented. "The clients had little money and time, and I'm always challenged by that," says Elliott, who oversaw the design and branding of the project from the logo and letterhead to the interior architecture and lighting. Limited by budget, "we powerwashed the shell, removed the dust, then sealed everything, all the cracks and crevices, and froze them in time," Elliott says. New architectural insertions, the bar and gallery spaces, appear to be objects floating within the historic space.

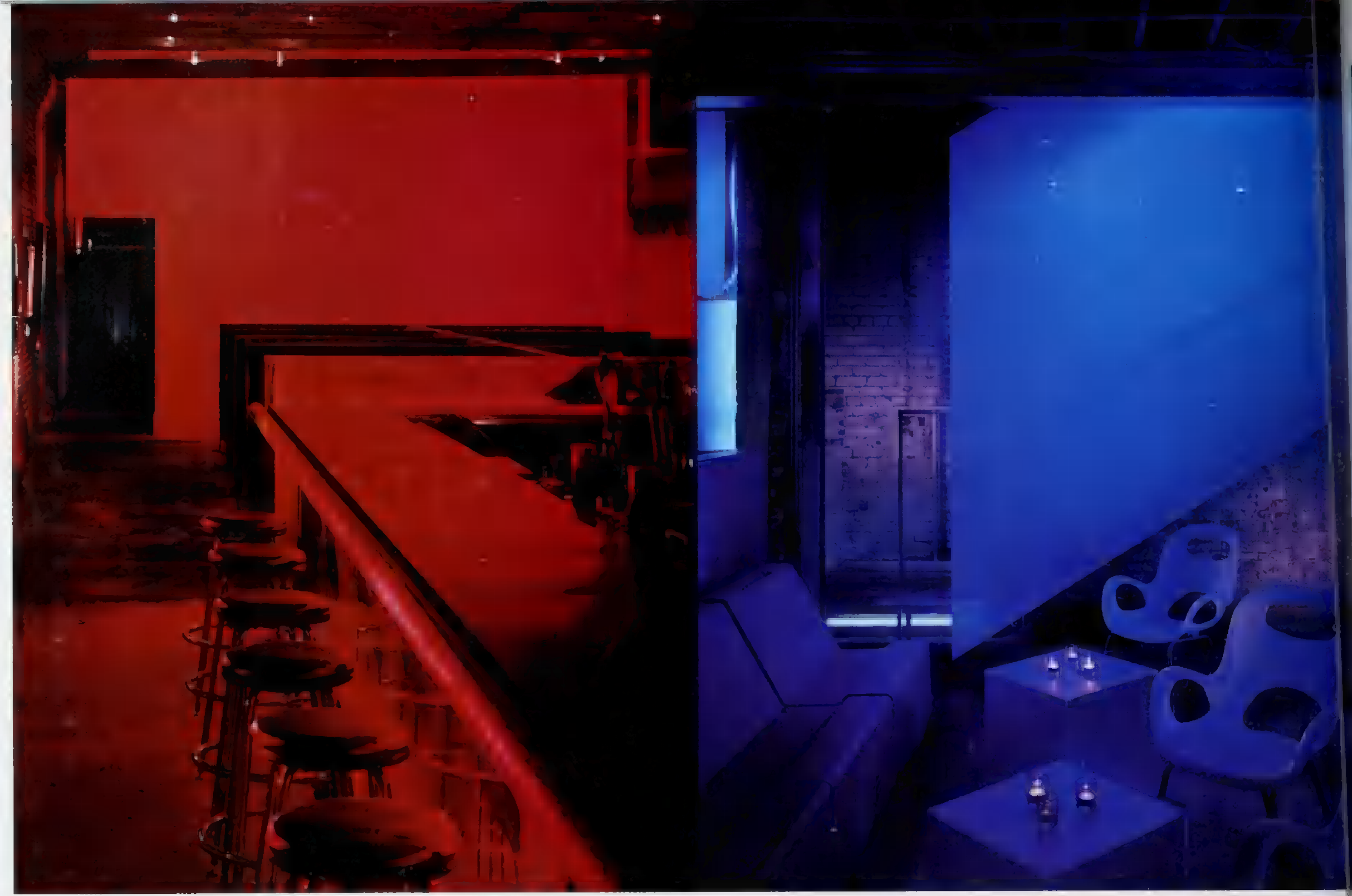
Colored lighting gives the bar its competitive edge, not to mention its name, LiT. Elliott's design objective was to devise a strategy of visual reinvention. "Any bar can become really dull for the staff and clientele who visit frequently," he explains. When the clients suggested the space function as a commercial gallery as well as a watering hole, Elliott saw the proverbial lightbulb of inspiration hovering above his head. "I asked myself, why doesn't the space change just as the art changes? So we proposed that the menu, art, and lighting change on a quarterly basis."

Since LiT opened last July, the lighting scheme has already shifted seasonally from red to blue to purple. Though the chromatic changes in illumination are stunning in effect, they are accomplished simply and at low cost. One hundred T8 32-watt fluorescents are placed at the edges of the 3,250-square-foot main interior, with inexpensive tube guards, or gels, used for changes in color. Through the center of the space, Elliott specified MR16 cable lighting, lamped at 20 and 50 watts. "We put glass filters on the cable lights so we could illuminate the center of the room with color, then illuminate the art with white light," he says. "It

Project: *LiT, Oklahoma City, Oklahoma*
Owners: *Lane Payton, Kyle Payne, Stephen Confer, Tyler Peyton*
Architect, lighting designer: *Elliott + Associates Architects—Rand Elliott, FAIA, design architect; Danny Theisen, Assoc. AIA, Branson Young, Assoc. AIA, Joseph Williams, Assoc. AIA, design team*
General contractor: *Lingo Construction*
Electrical contractor: *Womack Electric*







almost appears as though the artwork is illuminated from within."

Design and construction economics required using inexpensive building materials, which actually fit well with the architects' industrial-chic aesthetic. A bar face and rest-room countertops of galvanized steel have a reflective quality that complements the lighting while trumping the surfacing's industrial pedigree. Black, white, and translucent furniture allows lighting to reign as the premier design element. White partitions in the rest rooms absorb Elliott's tongue-in-cheek lighting plan: pink for the ladies and blue for the gentlemen.

Structural flaws, like a hole in the wall originally used as a path for a forklift, were transformed into design vignettes. The wall opening was covered with galvanized metal and anchors custom metal wine-bottle holders. Nearby, a perforation in the floor was covered with a metal grate and illuminated from within. "The flooring has a mystery to it," says Elliott. "Patrons wonder whether it is art or structure as they walk past."

A centerpiece is a backlit Plexiglas panel along a back wall beneath stairs leading to the roof deck. The illuminated panel creates a golden section while hiding another stairway up to an office. "The panel is the basis for the proportion of all the interior wall elements," Elliott says. "It synthesizes the art and architecture throughout the space." ■

Sources
Cable lighting: *ALFA*
Downlights: *ELP*
Exterior lighting: *Lithonia*
Task lights: *Lithonia; Paramount; First Source Lighting*
Exit lighting: *Quantum*
Controls: *Leviton*

WWW For more information on the people and products involved in this project, go to Lighting at **architecturalrecord.com**.

"When we conceived LiT, we thought about light as a source of energy and celebration," says Elliott. Above, saturated lighting is achieved with gelled fluorescents aided by cable lights. Below, a former hole in the wall now cleverly stores wine bottles.

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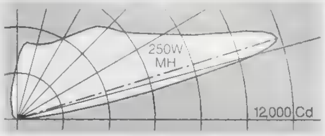

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Ceramic metal halide outshining incandescent

NEW TINY, LOW-WATTAGE, CERAMIC-METAL-HALIDE LAMPS AND MINIATURIZED ELECTRONIC BALLASTS MAKE IT POSSIBLE TO RETROFIT CMH FIXTURES ONTO EXISTING INCANDESCENT TRACK

By Lindsay Audin

Track-mounted incandescent lighting is the most commonly used system for the display of art and retail goods. Because incandescent lamps are cheap, have precise beam spreads, and produce accurate color, they have always been the lamps preferred for use in track fixtures. Now a new generation of tiny metal-halide lamps, miniaturized electronic ballasts, and new track fixtures permit metal halide to chip away at incandescent's predominance as the lamp of choice in track-lighting systems.

Innovative CMH lamps

In the past, nothing could rival the optical control of incandescent lamps. But even when ceramic-metal-halide (CMH) lamps, manufactured by Philips, Sylvania, and GE, began to approach the color quality and beam control of incandescent lamps, the size and weight of the fixtures discouraged most users from replacing their incandescent track with metal halide. Each fixture and ballast unit could weigh more than 4 pounds, so in addition to the cost of replacing the incandescent equipment, the structure supporting the track might also need to be upgraded. Another disadvantage in the past was that a metal-halide fixture's lamp wattage couldn't be changed without also changing the ballast. By contrast, the brightness and beam spread of an incandescent fixture could be altered simply by changing a lamp.

A compact ballast allows CMH to be installed on incandescent track.

CMH Lamps 101

For those who are unfamiliar with CMH lamps, here are some of the basics. These small lamps provide light that has a color-rendering index of 80 to 92, and they maintain their color-rendering capacity and light output over the lamp's life much better than earlier metal-halide lamps. CMH lamps produce about 80 lumens per watt, about four times as much as a halogen lamp. The high efficiency of such sources cuts air-conditioning loads and makes many spaces, such as stores and galleries, much more comfortable than those illuminated by "space heaters," as incandescent spots have been called. The new lamps emit only a tiny fraction of the ultraviolet radiation common to halogens and older metal-halide lamps. The CMH's ceramic element has an arc gap of just 3 mm. This allows its light to be concentrated with a smaller reflector than was previously possible; for example, a 39-watt CMH lamp is about the same size as an MR16. CMH lamps also start faster than earlier metal halides, reaching 90 percent of full output in 72 seconds, and restart in less than three minutes. Philips calls its CMH MasterColor; GE calls its brand Constant Color; and Osram Sylvania calls its lamps Metalarc Ceramic Metal Halide.

Lindsay Audin is the president of Energywiz, an energy and technology consulting firm.

Fitting CMH to existing track

Considering the millions of lineal feet of 120-volt incandescent light track in the world, it should come as no surprise that someone would figure out how to put metal-halide track heads on it. The company that did it is called Metal Light (www.metal-halide.us) and is located in New York City. Its creation is the Track Adapter Pak, a small ballast that is 8 inches long and 1½ inches square, weighs just 14.6 ounces, and may be twisted into place on any standard Juno, Halo, or similar single-circuit track. The bottom of the ballast has an opening that accepts a standard metal-halide track head. Metal Light makes these, as do well-known track-lighting manufacturers such as Times Square Lighting, Con Tech Lighting, Ruud Lighting, and Genlyte-Thomas's Daybrite.

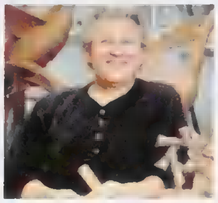
A lighting designer need only choose the lamp size, color, wattage, and style of track head that best fits the application. The ballast can handle 39-, 50-, 70-, or 100-watt CMH lamps; roughly comparable to incandescent in the 75- to 400-watt range. Any of these CMH lamp wattages can be chosen with the flick of a switch on the adapter ballast, so one has to use the lamp wattage that the track head was originally manufactured to handle. Should it be necessary to raise or lower brightness, one need only change the lamp and adjust the switch setting. Metal Light also makes track heads that accommodate GE's new ConstantColor CMH 20-watt bi-pin lamp for installation onto its Track Adapter Pak.

The all-important caveats

First, Metal Light's retrofit ballasts are not dimmable. If the track is wired to dimmers or a dimming system it must be disconnected and the track hardwired to a 120-volt circuit. Second, one should not attempt to install a medium-base incandescent track head with a medium-base metal-halide lamp screwed into it onto the retrofit ballast. The sockets are not designed to carry metal halide's high starting voltage and will fail. Finally, those designers or building operators seeking to retrofit a length of track that is carrying many track heads should verify that the tracks can carry the additional load. Changing 20 heads to CMH would add about 20 pounds to that single length of track.

As with any new product, always check the specs: UL listing, power factor, end-of-life/lamp-failure shutoff, flicker issues, resistance to power spikes, total lamp and ballast wattage used. Look for low harmonics and ease of part/lamp/ballast replacement. While Metal Light's equipment passes all the critical tests, other manufacturers' CHM ballasts may not. ■

PHOTOGRAPHY: © SUSANNAH



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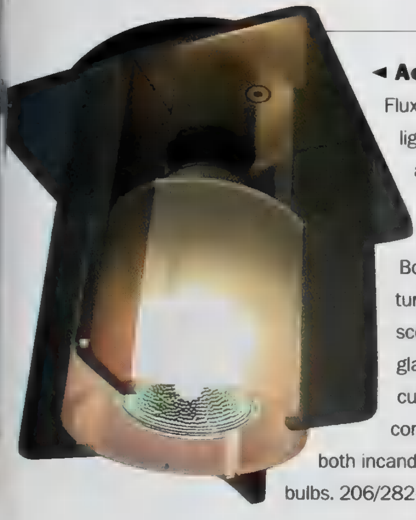
Lighting Briefs

► Pop the bubbly

Los Angeles furniture manufacturer Modernica announces the release of the 50th-anniversary-edition Diamond Bubble lamp, from an original George Nelson design long out of production. Created in 1947, the airy Bubble lamps are fashioned from sturdy, lightweight cages covered with a translucent, synthetic material that was originally developed during World War II to waterproof armaments. 213/683-1963. Modernica, Los Angeles. **CIRCLE 200**



◄ Aeronautical lighting

Flux has launched a line of architectural lighting that features nickel-plated steel and anodized aluminum components forged by the same contractors who helped make the Boeing 757 and Boeing 767 airplanes. Each pendant fixture, surface-mount light, and wall sconce has either handblown colored glass, or slumped and textured hydro-cut glass. Many of the residential or commercial fixtures can accommodate both incandescent and compact fluorescent bulbs. 206/282-3023. Flux, Seattle. **CIRCLE 202**

► Northern lights

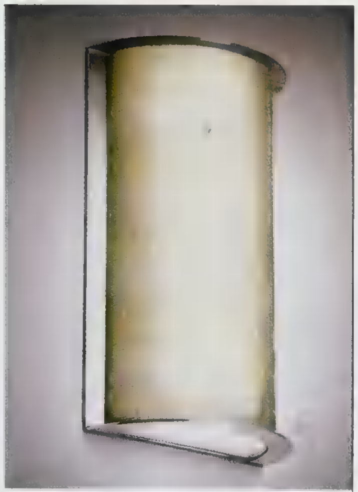
Louis Poulsen was one of the sponsors for last fall's Arne Jacobsen exhibition at Scandinavia House in New York City. The AJ Eklipta light fixture was designed by Jacobsen in 1965 for the City Hall in Roedovre, Denmark. The architect used the product in many of his later buildings, as well, often as a wall fixture for staircases. AJ Eklipta features a three-layer handblown glass shade with a clear edge that creates a halo of light around the perimeter. 954/349-2525. Louis Poulsen Lighting, Fort Lauderdale, Fla. **CIRCLE 204**

◄ Ice sculpture

Using natural, hand-carved rock crystal, artist Robert Kuo has created the Carved Ice table lamp for McGuire. Resting on a copper base, the translucent, textured crystal catches the light from the lamp and is paired with a Pongee silk shade to add contrast to the lamp's materials. Each lamp is signed, numbered, and dated. 415/626-1414. McGuire, San Francisco. **CIRCLE 201**

► Piece of bread

Pani is a collection of terra-cotta light wall lamps that are available in three different shapes called Baguette, Sfilatino, and Pagnottella (shown) for different powers of linear halogen bulbs. Pani is just one family of luminaires from the Italian lighting and furnishing design company Album. 39/039 220041. Album, Biassono, Italy. **CIRCLE 203**



◄ Acrylic textile shade

Nessen Lighting has teamed with Knoll Textiles to introduce the Imago acrylic textile shade material. The Imago resin-encapsulated shade fabric is available in a choice of 10 colors and textural patterns, ranging in appearance from denim to tweed to linen. Each may be specified as an optional shade choice on a wide range of Nessen decorative wall sconces with rectangular or tubular shades. 914/698-7799. Nessen Lighting, Mamaroneck, N.Y. **CIRCLE 206**

► Neonlike LED

Plexineon is a LED linear lighting system that glows and curves like neon but uses up to 70 percent less energy. The product can be used in long, straight pieces; connected to make one continuous piece; factory-bent tightly into letters or curves; or cold-bent tightly in the field into gentle waves or arcs. 847/328-7800. iLight Technologies, Evanston, Ill. **CIRCLE 205**

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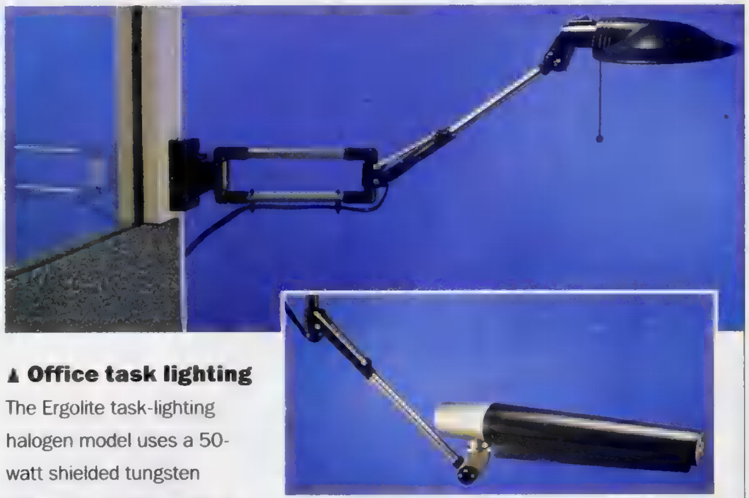
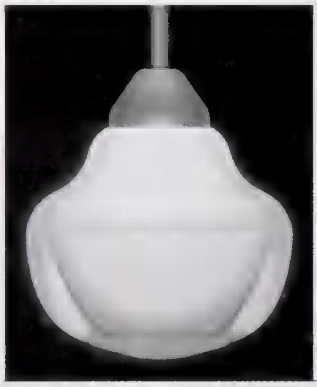
Lighting Briefs Efficient choices



▲ Office task lighting

The Ergolite task-lighting halogen model uses a 50-watt shielded tungsten halogen lamp that emits a pure white light from a low-profile circular lamp shade. The fluorescent model uses an energy-efficient, 13-watt, U-shaped lamp enclosed by an elongated, tapered, and louvered shade that aims all emitted light directly onto tasks. Mounting options for both models are comprised of adjustable-thickness edge clamps; circular, nonmarring, weighted table bases; go-anywhere magnetic mounts; and panel mounts that fit most major office panel systems. 800/648-2978. Luxo Corporation, Port Chester, N.Y. **CIRCLE 207**

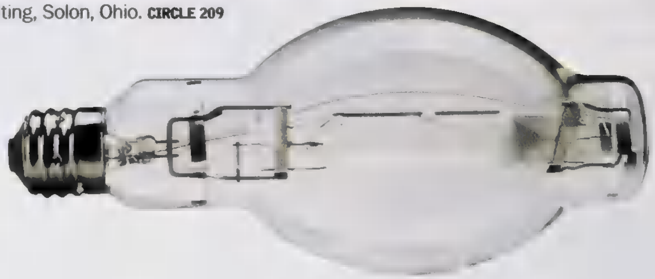


◄ Shapely fixtures

Illuminaire lighting fixtures are available in five optical designs and two sizes with up to 92 percent efficiency. The shapes include the Egg, Crest, Tri-Egg, Tri-Crest (shown), and Quad. The luminaire's prismatic glass reflectors and refractors supply high levels of vertical and horizontal illumination to promote high-level visibility for commercial, retail, or light industrial applications. 740/345-9631. Holophane, Newark, Ohio. **CIRCLE 208**

▼ Wattage savings

Part of Venture Lighting's full line of energy-efficient metal halide systems, the 875-watt horizontal lamp provides energy savings of up to 155 system watts per luminaire compared to a traditional 1,000-watt universal metal halide system. The lamp offers 95,000 initial lumens with a life rating of 12,000 hours. 800/451-2606. Venture Lighting, Solon, Ohio. **CIRCLE 209**



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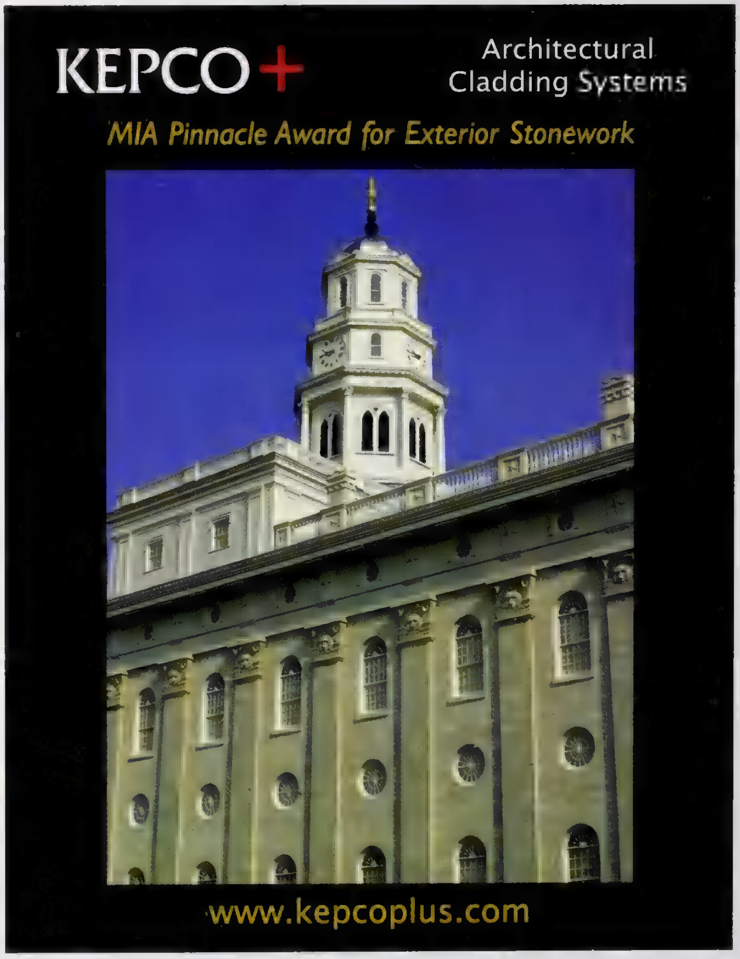

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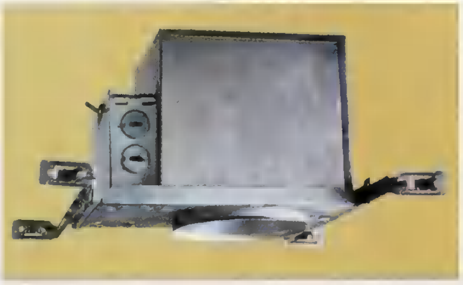
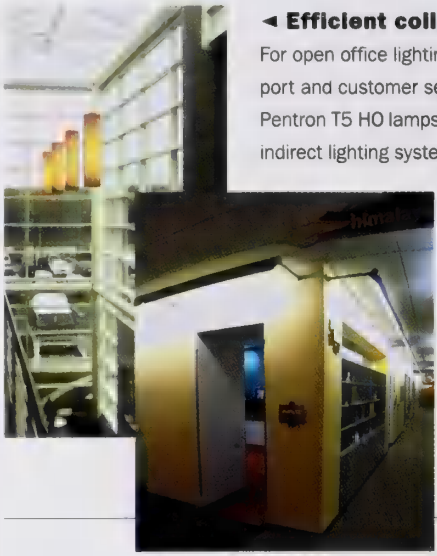
Lighting Briefs Efficient choices

▾ Airtight light

Juno Lighting has introduced its new, 4-inch PAR ICI Downlight to enable installation in a greater variety of space-restricted insulated plenums, to save energy, and to enhance aesthetics with improved beveled-trim rings. The new housing design is Air-Loc rated without requiring the use of supplemental gasketing. The Air-Loc rating complies with energy-efficiency requirements first established in the State of Washington that do not allow conditioned air to escape a recessed fixture or unconditioned air in the attic to enter through it. An Air-Loc recessed fixture can save more than $4 per year per fixture in energy costs compared to a similar IC-rated fixture that does not carry the Air-Loc rating. 847/827-9880. Juno Lighting, Des Plaines, Ill. **CIRCLE 210**



◂ Efficient collaboration



For open office lighting for the Symantec technical support and customer service center in Springfield, Oregon, Pentron T5 HO lamps were used in high-performance indirect lighting systems providing 30-footcandle levels. The outer rows of luminaires nearest the windows are automatically dimmed by daylighting controls using Quicktronic PHO-DIM ballasts. Actual lighting energy use is approximately 50 percent of the amount permitted by the Oregon Energy Code. 978/777-1900. Osram Sylvania, Danvers, Mass. **CIRCLE 211**

▸ Lasting lamps

Philips' new Alto Plus Slimline T8 8 Foot fluorescent-lamp family features a life of up to 30,000 hours, which is 60 percent greater than other 8-foot fluorescents, which last about 12,000 to 18,000 hours. In addition, the Slimline lamps deliver a high CRI of 85 and 95 percent lumen maintenance over the life of the lamp. 800/555-0050. Philips, Somerset, N.J. **CIRCLE 212**

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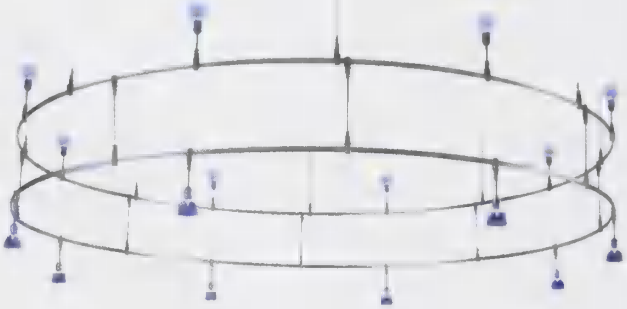

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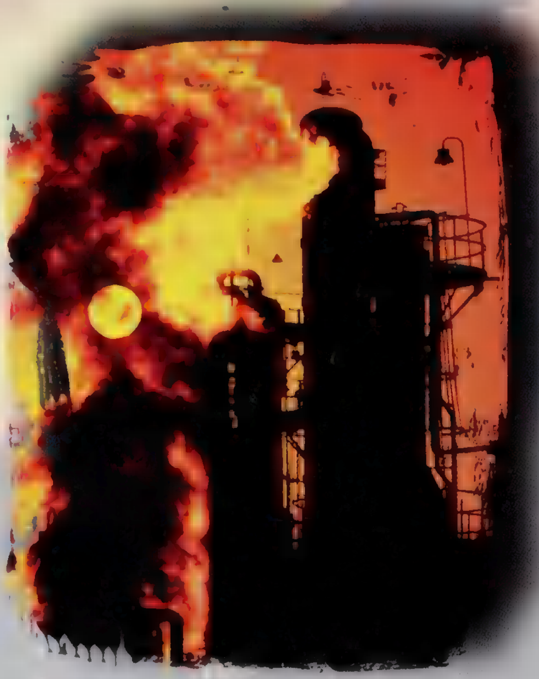

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New Products

What makes a **product green?** The editors of the *GreenSpec Directory* suggest criteria including environmentally attractive material content or features that reduce the **environmental impact** of building operation. For more info, check out this month's article on selecting green materials, on page 173. *Rita F. Catinella*

BuildingGreen announces the Top 10 Green Building Products of the Year

BuildingGreen, publisher of the *GreenSpec Directory* and *Environmental Building News* (*EBN*), announced its selection of the top 10 new green building products of the year. This first-ever award, announced at the Green Building Council's International Green Building Conference in Austin, Texas, last November, recognizes outstanding products added to its *GreenSpec Directory* during the past year.

The 10 products chosen represent a range of materials and equipment that can help to reduce the environmental impact of a building. Some products selected may have been on the market for more than a year. "We sought to recognize a wide variety of products in an effort to convey to designers, builders, and building owners the wide array of green building products that are available today," says *GreenSpec* coeditor Alex Wilson. "We wanted to choose some really new or innovative products that even seasoned green architects or builders might not have heard of yet." Wilson notes that selecting only 10 products from the 250-plus new products in the directory was difficult. "Five years ago it would have been easy to select the standout green building products. But so many new products are being introduced now that selecting the top 10 products was a huge challenge."

BuildingGreen plans to make the top 10 announcement an annual event at the Green Building Council conference and trade show. The next conference takes place from November 12 to 14 in Pittsburgh.

Eight of the green products selected are shown here. The two products from the top 10 that are not shown include formaldehyde-free fiberglass from Johns Manville and the McDry waterless urinal from Duravit USA. Both products were recently highlighted in the Product Reports section of RECORD's December 2002 issue. 802/257-7300. BuildingGreen, Brattleboro, Vt. **CIRCLE 213**

◂ Cooling heater

WatterSaver is the first heat-pump water heater that is designed as a drop-in replacement for a standard electric water heater. The 50-gallon unit extracts heat from the indoor air to heat water using about half the energy of an electric-resistance water heater. During operation, the WatterSaver consumes about 500 watts of electricity and produces 3,500 Btus per hour of cooling, which in a warm climate serves as free air-conditioning. 716/366-5500. ECR International, Dunkirk, N.Y. **CIRCLE 214**

◂ Insulating aerogel

Until recently, Kalwall's highest-performance translucent glazing system was a 70-millimeter panel with fiberglass insulation that insulated to R-10 and transmitted up to 9 percent visible light. Kalwall R-20 is a new 70-millimeter glazing system that provides double the insulation value and transmits up to 20 percent of visible light. This is achieved by filling the glazing unit with a granular silica aerogel from Cabot Corporation called Nanogel. 978/670-8018. Cabot Corporation, Billerica, Mass. **CIRCLE 215**

▲ Cans of green paint

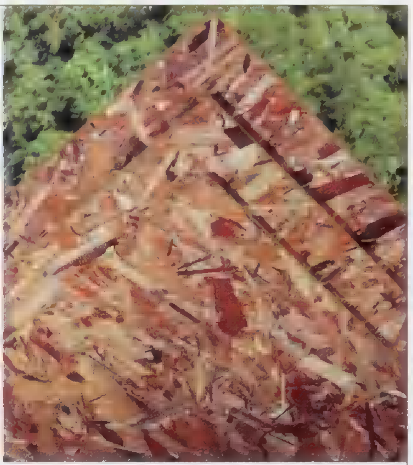
Pittsburgh Paints' Pure Performance line of interior paints is the latest zero-VOC product to enter the market. While most low-VOC paints today use acrylic or vinyl acetate resins, Pure Performance uses a newer vinyl acetate ethylene resin. The company claims equal performance to the second-to-the-top Wallhide line it replaces, and there is no cost premium. This is the first paint to be certified under a new Green Seal standard for paints. 800/441-9695. PPG Architectural Finishes, Pittsburgh. **CIRCLE 216**

New Products

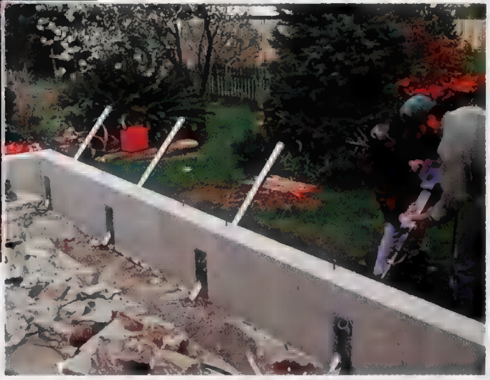
▲ Wheat-straw fiberboard

WoodStalk is a fiberboard product made from wheat straw. It is available in various thicknesses for use in cabinets, shelving, furniture, and underlayment. Not only is the product made from a waste agricultural material (straw), but formaldehyde is not used in its manufacture. (Conventional particleboard and MDF are made with urea-formaldehyde binder and can emit formaldehyde gas.) WoodStalk can be used in place of Lauan plywood as a resilient flooring underlayment, thereby protecting the world's rain forests. 979/238-5329. Dow BioProducts, Manitoba, Canada. **CIRCLE 217**

► Certified OSB



The Roy O. Martin Lumber Company's Tuff-Strand oriented strand board is the first such product to be certified according to standards developed by the Forest Stewardship Council. To receive this certification, the company had to go through an extensive third-party review of its forestry practices on its timberlands in Louisiana. In addition to offering FSC-certified OSB, the Roy O. Martin company also offers FSC-certified softwood plywood, concrete forms, hardwood lumber, and utility poles. 800/299-5174. ROMEX World Trade Company, Alexandria, La. **CIRCLE 219**

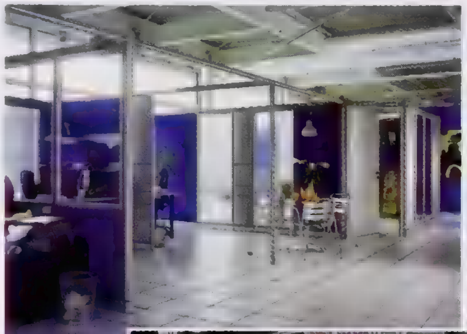


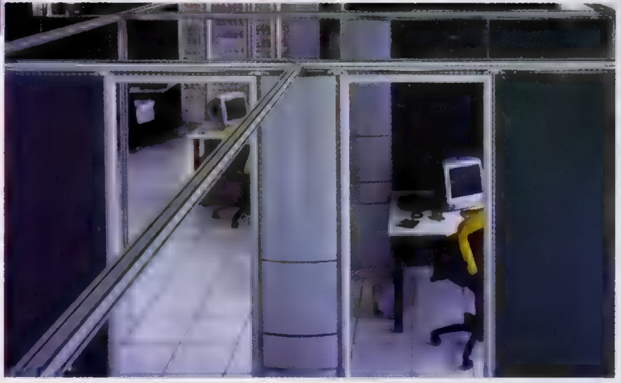
◄ Friendly foundation system

The Low Impact Foundation Technology (L.I.F.T.) is a foundation system that can be installed with almost no excavation. Sections of foundation wall are poured above ground and "pinned" into the ground using heavy-duty steel pins that extend deep enough to support the structure and prevent uplift. This same basic technology has been used for about five years in supporting boardwalks in ecologically fragile locations, such as wetlands, where excavation would cause significant damage. The L.I.F.T. system is being used on a limited basis in the Pacific Northwest, including a Habitat for Humanity home completed last summer. 253/858-8809. Pin Foundations, Gig Harbor, Wash. **CIRCLE 221**

▼ PVC-free partitions

Preform Manufacturing offers a range of office partition systems that are manufactured from environmentally responsible materials. Their Classic Panel and Decato systems utilize core materials made from a foamed flue-gas gypsum product, 100 percent recycled-content foamed glass, and a high-recycled-content cellulosic honeycomb material. The company also uses natural textiles and is experimenting with other bio-based materials, including a proprietary resin material. All components are PVC-free, and all finishes are nontoxic. 407/673-7474. Preform Manufacturing. Orlando. **CIRCLE 218**





▼ Dry hands, conserve energy

The new XLerator hand dryer's high-velocity fan results in a typical drying time of just 12 to 15 seconds (versus 30 to 45 seconds for conventional electric dryers). Along with saving a great deal of money in operating costs, compared with paper towels or a standard dryer, the XLerator also performs better from a life-cycle assessment standpoint. Including the energy to produce paper towels, the XLerator uses just 10 percent as much energy per hand-drying use as virgin paper towels, and 17 percent as much as when recycled paper towels are used, according to research compiled by *EBN*. 413/525-4531. Excel Dryer, East Longmeadow, Mass. **CIRCLE 220**

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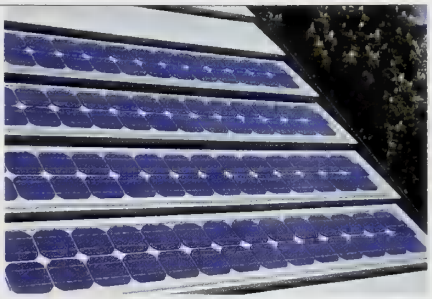
roduct Briefs

Princely frog

he Frog armchair and chaise longue (shown) were two of the new furnishings designed by Piero Lissoni for Living Divani on display at last year's Promosedia chair trade fair in Udine, Italy. The Minimal-style seating collection comes in a variety of coverings, including felt, coach hide, PVC, rope, and padding. 39 031 630954. Living Divani, Anzano del Parco, Italy. **CIRCLE 222**

▲ Redeemable plastics

One of the innovative manufacturers on display at 100% Design, held last year in London, was Smile Plastics. The company is committed to sourcing and developing markets for sheets made from recycled plastics waste, including old plastic bottles, coffee cups, yogurt cups, and industrial waste. Last year's introductions included sheets made from crushed CDs, plastic water bottles, toothbrushes (above left), bank notes (above right), and scrap from the Smile Plastics' factory. 44 01743 850267. Smile Plastics, Shrewsbury, United Kingdom. **CIRCLE 224**

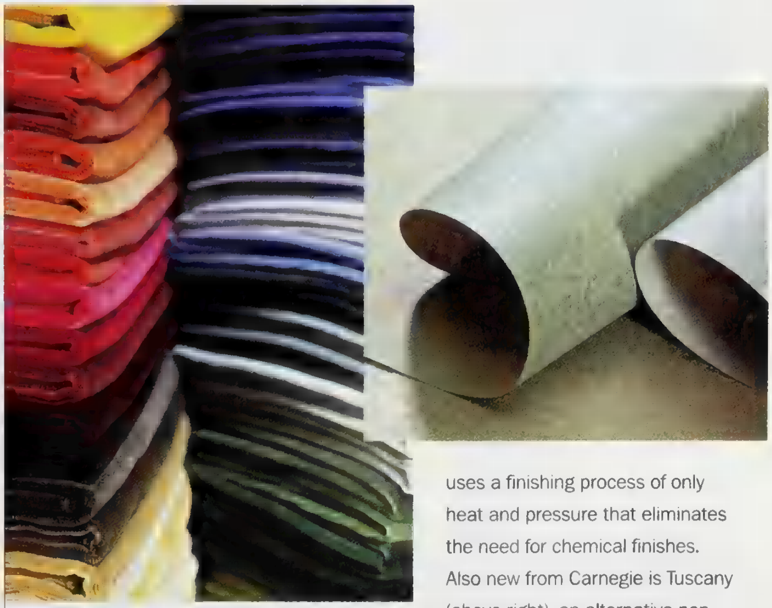


► Roof-integrated PV system

The Quick Step Rheinzink Solar PV roof-integrated module system features a 3M binding technique that meets requirements pertaining to light penetration, weather, and aging resistance. The system is suited for roof pitches of 10 degrees to 75 degrees. Without having to walk on the solar modules, they are connected by a roof installer with the aid of a plug-in system. An authorized electrician connects the converter or converters. 617/948-2520. Rheinzink Canada, Boston. **CIRCLE 225**

Product of the Month Mimosa Finishes

Mimosa International specializes in the production and application of a range of authentic Italian decorative finishes for commercial and residential interiors, exteriors, and furnishings. One hundred percent natural materials are hand-applied by craftspeople to produce a range of washable, water-resistant, odorless, and durable finishes. The products can be applied to virtually any surface and produced in custom-made colors and textures. Recent projects include the Villa Venezia residence in Palm Beach, Florida, Smith Architects and Bunny Williams (right); the Prada U.S. Headquarters, Herzog & DeMeuron; and Equinox Gyms, by David Rockwell Architect (top right). Mimosa has collaborated with classic modern furnishings manufacturer Cassina to create a set of fixtures, display cases, and furniture designs for the new 7,000-square-foot Alfred Dunhill New York flagship store. 212/334-0330. Mimosa International, New York City. CIRCLE 223



▲ Alternative coverings

IQ Smart Fabric (above left) is a new upholstery and panel fabric from Carnegie. Composed of a 100 percent polyacrylic face, IQ has one million pile knots per square yard, resulting in higher pile density and greater durability. IQ uses a finishing process of only heat and pressure that eliminates the need for chemical finishes. Also new from Carnegie is Tuscany (above right), an alternative nonwoven wall covering that is PVC- and chlorine-free. Offering a nonwoven base of polyester and viscose, Tuscany is infused with water-based acrylic inks and minerals to create a metallic sheen. 516/678-6770. Carnegie, Rockville Centre, N.Y. **CIRCLE 226**

Product Briefs

▼ Bamboolike pulls

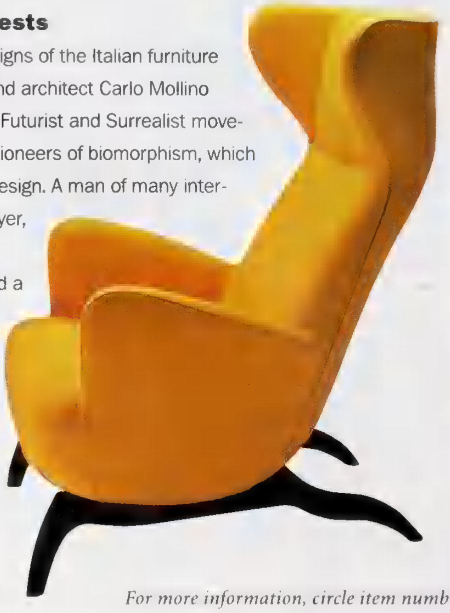
Valli & Valli's new collection of bamboo-inspired door pulls was designed by architect Leon Krier. Suitable for both residential and contract use, the pulls are available in gold, satin chrome, and rustic finishes. The Krier door pull is the newest addition to Valli & Valli's collection of products by distinguished architects and designers. 877/326-2565. Valli & Valli, New York City. **CIRCLE 227**

▼ Get ready, get set

The new Get Set Collection from Allsteel includes tables and seating that can easily be configured for team meetings and breakout sessions. The tabletop features a flip-up top and quickly and compactly folds and nests for storage. The chairs have a cushioned seat, a "flex back" that follows the natural movement of the body, a sloping arm, and perforations in the back that allow for air circulation. 563/262-4800. Allsteel, Muscatine, Iowa. **CIRCLE 229**

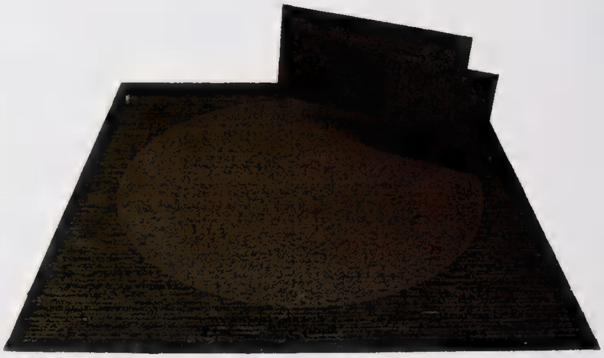
► Designer of many interests

M2L presents four re-editioned designs of the Italian furniture designer, artist, interior designer, and architect Carlo Mollino (1905–73). Mollino, inspired by the Futurist and Surrealist movements of his time, was one of the pioneers of biomorphism, which greatly influenced postwar Italian design. A man of many interests, Mollino was an expert stunt flyer, avid skier, race-car driver (and designer), student of the occult, and a photographer known for his erotic Polaroids. The Ardea armchair (shown) was designed in 1944 for the Minola House in Turin. It features a removable cover, a black painted wood base, and a steel frame. 212/832-8222. M2L, New York City. **CIRCLE 230**



▲ Looming designs

Tuva Looms, a woven carpet company founded by Terry Mowers and Suzanne Tick, is expanding its collection with three new designs and subtly altering colors of existing patterns, all eight of which are still available. The three new patterns are: Double Grid, a large-scaled window-pane pattern on a tatamilike ground; True Path, a linear pattern of ribbed construction; and Open Plane, whose block pattern is outlined with surface ravines created by "warp voids." 212/598-1021. Tuva Looms, New York City. 212/598-1021. **CIRCLE 228**



► Carpeting philosophy

Interface introduces the Philosophy Collection of carpet tiles, which includes three new patterns: Cogent, Perpension, and Rationale. The tiles feature a heavy, nubby texture in a tufted-loop construction that varies in pattern across the three modular formats. The 50 cm tile offers the most flexibility on the floor and displays the smoothest texture; the 50 cm x 1 m plank can be arranged in a number of patterns, such as herringbone or ashlar; and the 2 m x 2 m modular rugs provide a set geometric pattern. 706/882-1891. Interface Flooring Systems, LaGrange, Ga. **CIRCLE 231**

◄ Welcoming entrance

The Ingress'r ADA-compliant door control offers improved accessibility to visitors ranging from the most severely disabled (with limited use of their limbs) to parcel-laden traffic. The door control offers a tapered contour shape to deter shear-off from wheeled conveyances, a height of 36", and a 2" wide central column that is fully activated by a tap at any height. 877/421-9490. Wikk Industries, Greendale, Wis. **CIRCLE 232**

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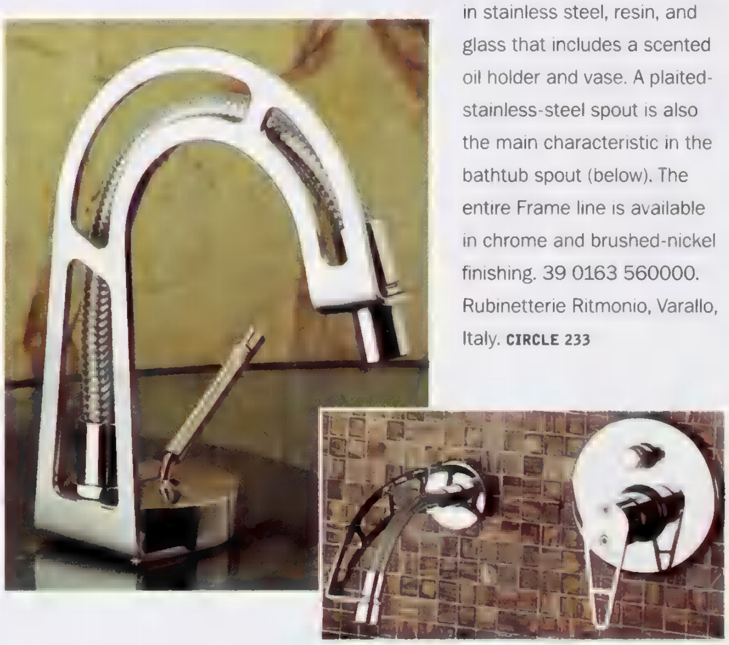
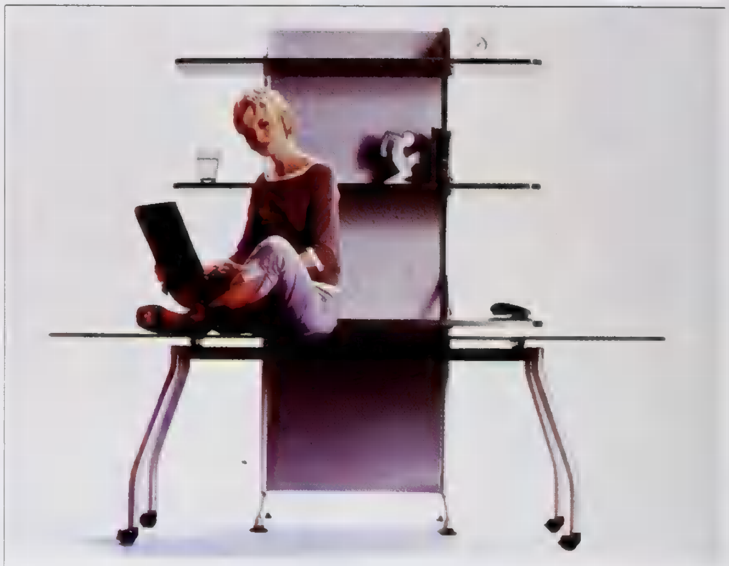


▼ Worthy of framing

The Frame line of bathroom fixtures features a flexible plaited-stainless-steel hose covered by a transparent PVC film. The fixture's "frame" is a structural element turned out from a stainless-steel laser-cut plate. Frame also has an accessories line in stainless steel, resin, and glass that includes a scented oil holder and vase. A plaited-stainless-steel spout is also the main characteristic in the bathtub spout (below). The entire Frame line is available in chrome and brushed-nickel finishing. 39 0163 560000. Rubinetterie Ritmonio, Varallo, Italy. **CIRCLE 233**



▲ Workplace workhorse

Werndl comprises an array of modular, mobile, and combinable office furnishings that integrate steel, aluminum, fine wood veneers, and high-impact plastics. The system includes: Emerge, a workstation with integrated wire management; Freewall, an expandable partition providing wire management and adjustable shelving; Touchdown, a sit-stand, height-adjustable side table; Fliptop, a foldaway desk; Moby, a family of lockable file and storage carts; Tokyo, a fixed shelving unit; Communicator, a mobile media cart; and InfoTainer, an array of presentation furnishings. 972/641-2860. Vecta, Grand Prairie, Texas. **CIRCLE 234**

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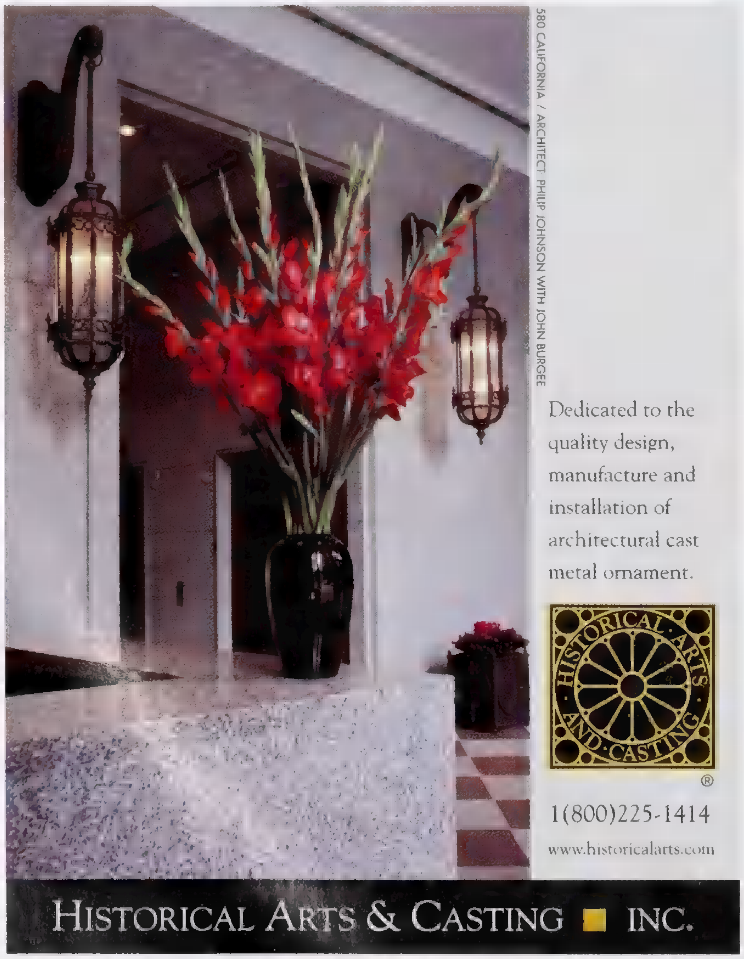
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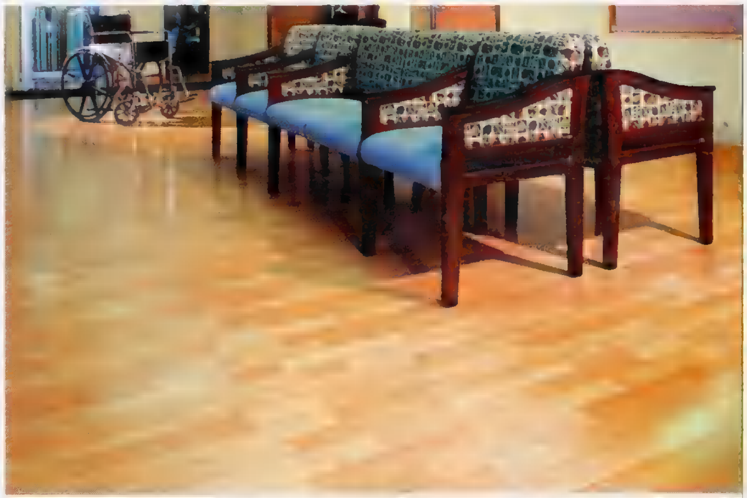
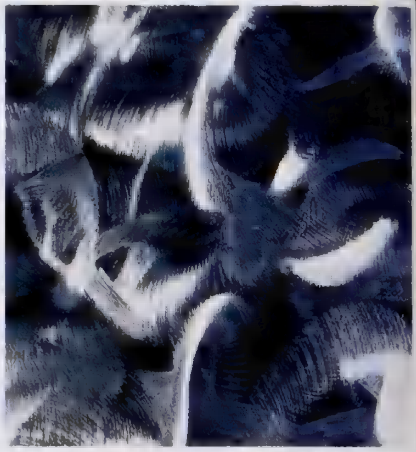


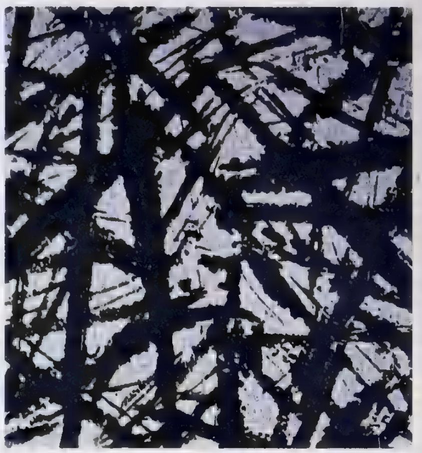
▲ Commercial-grade laminate flooring

Wilsonart has launched a new high-pressure laminate flooring collection called Velocity, designed exclusively for commercial environments. The collection features 20 different exotic wood, stone, and abstract designs. Velocity is constructed with a commercial-grade core and high-performance wear layers and impact layers to withstand the wear and tear of commercial environments. Velocity is Wilsonart's first commercial flooring designed for use with the company's new adhesive-free Trac-Loc installation system. 800/710-8846. Wilsonart, Temple, Texas. **CIRCLE 235**

► Scratching the surface

New designer finishes are available in Alucobond material for exterior cladding and interior finishes. The brushed surfaces are offered as anodized exterior finishes or clear-coat interior-only finishes in designs called Graffiti (random swirls applied by mechanical means, shown above right); Grass (mill-finish-aluminum and satin finish that is highly directional); and Diversion (mill-finish-aluminum and satin finish that is mostly directional, shown below right). The embossed surfaces form a 3D pattern that maximizes texture and contrast while providing a strong visual presence. 800/382-6445. Alcan Composites, St. Louis. **CIRCLE 236**





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Product Literature

Health-care furnishings

BioFit Engineered Products offers two brochures for their newest furnishing offerings. The first catalog describes BioFit's line of Fold-N-Roll tables for training and meeting facilities, learning and activity centers, cafeterias, and other applications in plants, offices, and schools. *Seating for Health Care Settings* is a catalog to assist in the specification of chairs and stools for health-care applications. 800/597-0246. BioFit Engineered Products, Bowling Green, Ohio. **CIRCLE 237**

Fine case-goods brochure

CCN International offers a new brochure for its Foundation Collection of hand-configurable, fine wood desk and case-good components. Photos illustrate the many perimeter-mounted work surfaces, desks, tables, reception stations, credenzas, and storage-display cabinets that comprise Foundation. 315/789-4400. CCN International, Geneva, N.Y. **CIRCLE 238**

Revived lighting

Rejuvenatio's Early Winter 2002 catalog features an expansion of the company's Modern America line of light fixtures for homes built from the mid-1920s through the 1940s. 888/401-1900. Rejuvenation, Portland, Ore. **CIRCLE 239**

NEW SITES FOR CYBERSURFING

Information about "green" polyiso insulation products **www.greenzone.com**

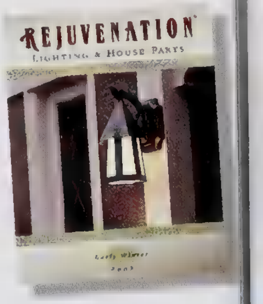
Reclaimed wood from old barns **www.old-barn-wood.com**

Newly redesigned site for custom furniture, lighting, and accessories **www.jrobertscott.com**

New site design for fiber cement product manufacturer **www.nichiha.com**

Full-line fan catalog

The new Monte Carlo Fan Company catalog is the first full-line catalog from the company in three years. The 116-page catalog features more than three dozen lines of fans, each of which is offered in a range of fan housing and blade colors. 856/764-0500. Monte Carlo Fan Company, Fort Worth. **CIRCLE 240**



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Product Literature

Track lighting catalog

Lithonia Lighting's full line of track lighting is highlighted in a new 32-page catalog. The piece includes product photography, dimensional drawings, and technical information to allow easy product selection and ordering. In addition to traditional track heads such as flatback, roundback, and lamp holder, new products such as PAR shades and metal-halide lamp holders are featured in the brochure. 770/922-9000. Lithonia Lighting, Conyers, Ga. **CIRCLE 241**

CRSI award winners

The Concrete Reinforcing Steel Institute announced the winners of its 16th Biennial Design Awards Competition in its *2002 Design Awards Brochure*. The 28-page brochure features 10 structures selected for their excellence in utilizing conventionally reinforced cast-in-place concrete. Jury selections represent a wide spectrum of project types, including buildings, bridges, parking facilities, and public infrastructure needs. 847/517-1200. Concrete Reinforcing Steel Institute, Schaumburg, Ill. **CIRCLE 242**

Ventilation product catalog

Greenheck's new *Architectural Products* catalog provides an overview of the company's comprehensive line of louvers and other architectural ventilation products. The illustrated catalog also includes penthouse and equipment screens, sunshades, and standard or custom egg-crate grilles, all designed to complement Greenheck's air movement and control products worldwide. 715/359-6171. Greenheck, Schofield, Wis. **CIRCLE 243**

Wall-mounted lighting

Wall-mounted Wallpack Series luminaires from Holophane are described in a new brochure from the company. Applications include office complexes, schools, parks, parking garages, residential areas, campuses, walkways, and underpasses. 740/345-9631. Holophane, Newark, N.J. **CIRCLE 244**

Treated wood answers

The Southern Pine Council, in cooperation with the American Wood Preservers Institute, has released a new edition of the brochure, *Answers to Questions About Pressure-Treated Wood*. The booklet offers more than 30 definitive answers to popular questions asked about treated wood. 504/443-4464. Southern Pine Council, Kennar, La. **CIRCLE 245**

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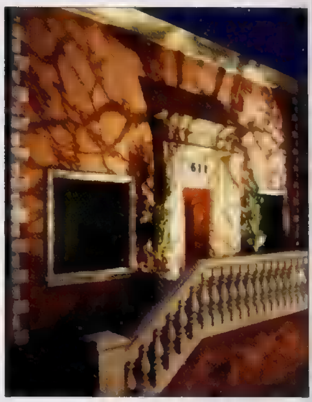

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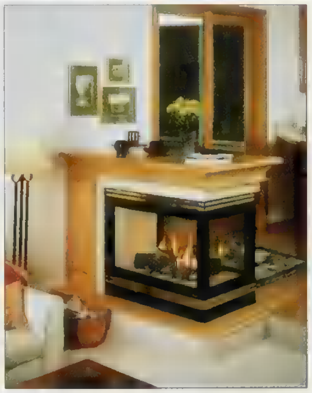

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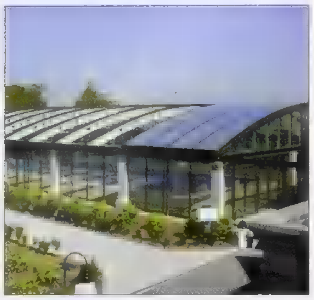

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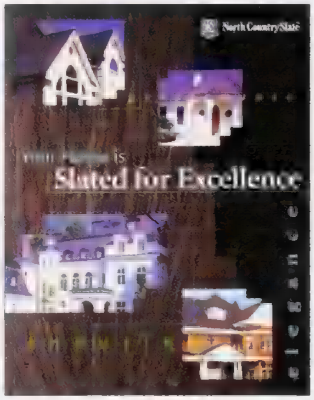

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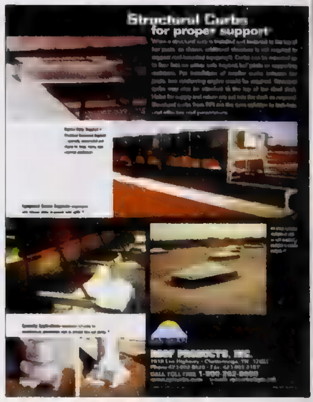

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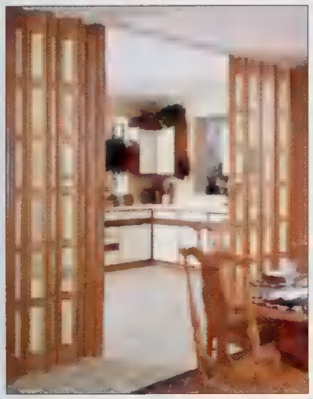

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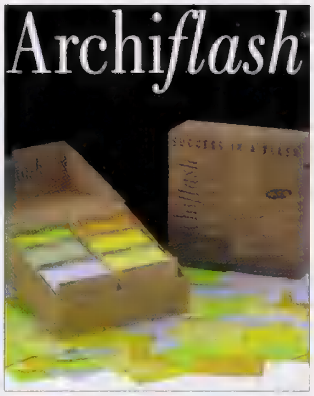

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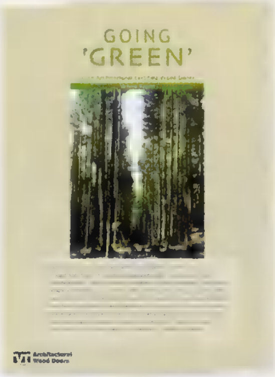

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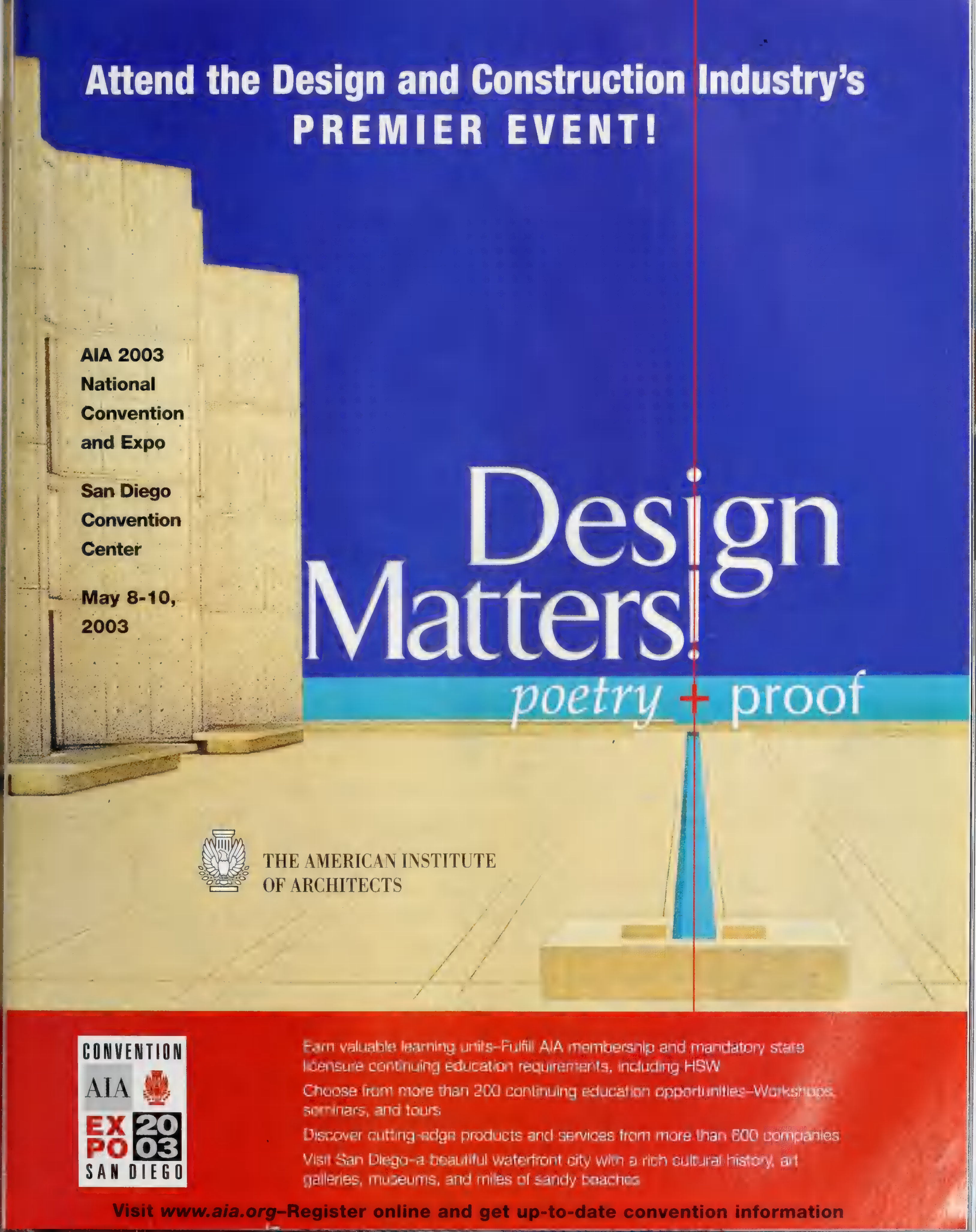

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The search committee will begin its review of candidates in early February. Send a letter of interest, a curriculum vitae, and three names of reference to: Dr. Peter Cimbolic, Vice Provost and Dean of Graduate Studies, The Catholic University of America, 116 McMahon Hall, Washington, DC 20064. The Catholic University of America was founded in the name of the Catholic Church as a national university and center of research and scholarship. Regardless of their religious affiliation, all faculty are expected to respect and support the University's mission. The Catholic University of America is an equal opportunity employer.

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Established in 1881, the School is one of the oldest in the country. It currently offers programs leading to the Master of Architecture, the Master of Science, and the Ph.D. to more than 575 students and maintains close collaborative relationships with Columbia's 16 other Schools to further its educational mission and scholarly agenda. Its 17 full-time and 130 part-time faculty include many who are internationally renowned for their professional achievements, scholarship, and teaching.

Columbia seeks an accomplished professional or scholar with a distinguished record of achievement, the ability to plan strategically for the future of the School, and a commitment to working creatively with its faculty to develop and deliver innovative new curricular, research, and professional programs. The successful candidate will also be expected to have a demonstrated record of administrative leadership and be an effective fund-raiser.

Letters of application or nomination should be submitted to the search committee, with an accompanying *curriculum vitae*, care of the Office of the Vice Provost for Academic Administration, Columbia University, 310 Low Memorial Library, Mail Code 4326, New York, NY 10027, by February 14, 2003. They may also be submitted by e-mail to archsearch@columbia.edu. The screening of candidates will begin immediately and continue until the position has been filled.

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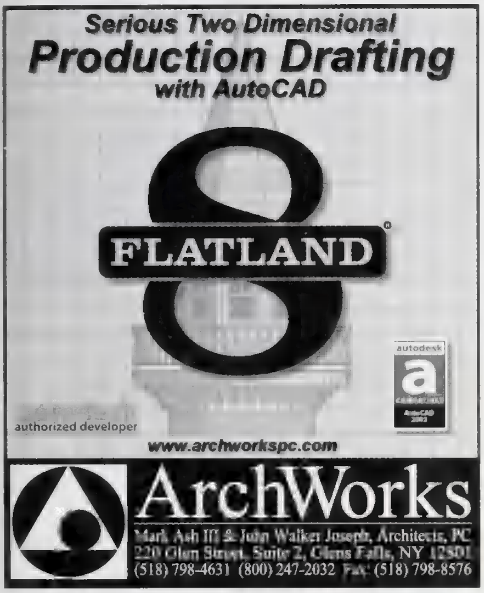
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Matt Petersen: California greenin'

Interviewed by Deborah Snoonian, P.E.

Matt Petersen works shoulder-to-shoulder with Mikhail Gorbachev, who founded the advocacy group Green Cross International in Geneva in 1993. Petersen is president and C.E.O. of its U.S. affiliate, the Los Angeles–based Global Green USA, which partners with government agencies to promote sustainable development and awards designers for green building. A Golden State native from Modesto, Petersen began his career as a campaigner (for Dukakis in 1988 as well as political races in California). As a graduate student at USC, he ran Americans for a Safe Future, a group that protested the building of a nuclear waste dump near the Colorado River. RECORD *caught up with Petersen just two days before his wife, Leila, gave birth to their son, Aidan Michael.*

Q: *An environmental-advocacy group based in Los Angeles—sounds like an oxymoron. Why there?* It's a challenge to catch people's attention about the environment in Los Angeles, but it has a pragmatic side to it, too—"If you can do it here, you can do it anywhere" is our attitude. We're also located here because of its proximity to the media and entertainment community and because California is a leader, not just nationally, but globally, on environmental trends.

How did you become interested in the environmental movement? I grew up in Modesto, which, along with other Valley cities—Fresno, Sacramento—has become synonymous with sprawl. My dad tells a story of when I was five years old and we were at a park. I guess there was litter on the ground, and I said, "Dad, we gotta do something about our planet!" So, as he tells it, my awareness came earlier than I remember. Really, it was related to my work in politics, especially when I campaigned in 1992 for Tony Beilenson [California congressman, now retired] who was a strong advocate for the environment.

When did Global Green begin working on sustainability and design issues? It started in 1995 when we launched a partnership with Habitat for Humanity. Our mandate was to develop their environmental commitment, to be stewards of God's resources, as they would put it—lowering energy bills for low-income families. We also held a conference of sorts with green-building experts like Bill McDonough [architect] and Ray Anderson [C.E.O. of Interface Carpet]. That grew into our greening-affordable-housing initiative; then we began partnering with cities to develop sustainable building programs. The idea of recognizing designers for green building evolved from this.

What's it like to work with Mikhail Gorbachev? He's an amazing man. I met him in 1994 at our first major series of events. I remember thinking his soul just comes up through his eyes and grabs you. He firmly believes that environmental protection is the greatest challenge of this century. Seeing the fallout from the Chernobyl disaster affected him very deeply. On a personal level, he's always got a great joke and provokes interesting conversation. Every time you talk to him, he ends up sitting at the edge of his chair.

Did you go to the U.N. environmental summit in Johannesburg? Yes. One thing we proposed while there was shifting fossil fuel subsidies to a $50 billion solar venture fund, to drive down the cost of solar energy technologies so designers can integrate them into buildings more readily. It got a lot of attention—the Dutch government's very intrigued, and others, as well. ■

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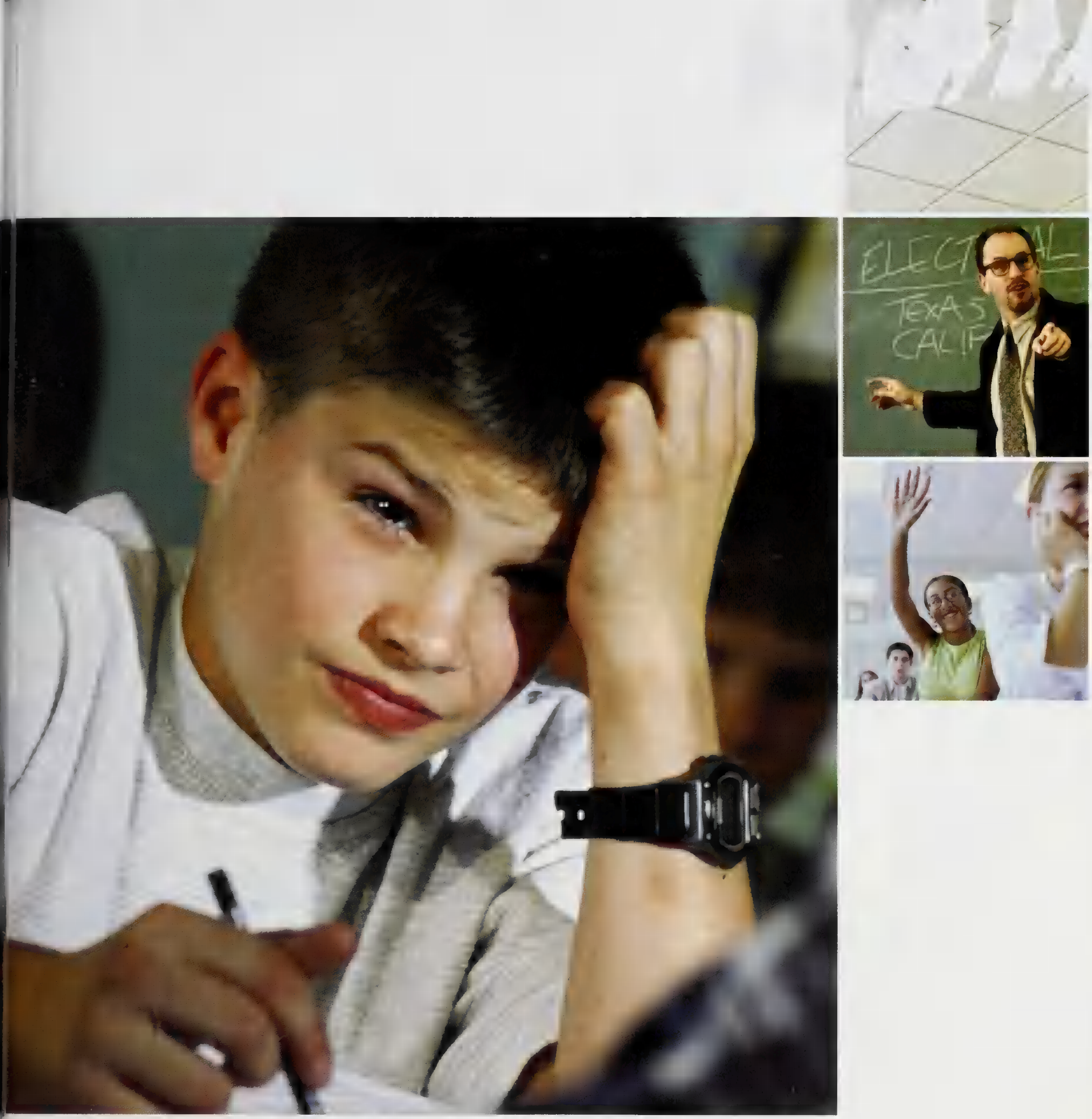

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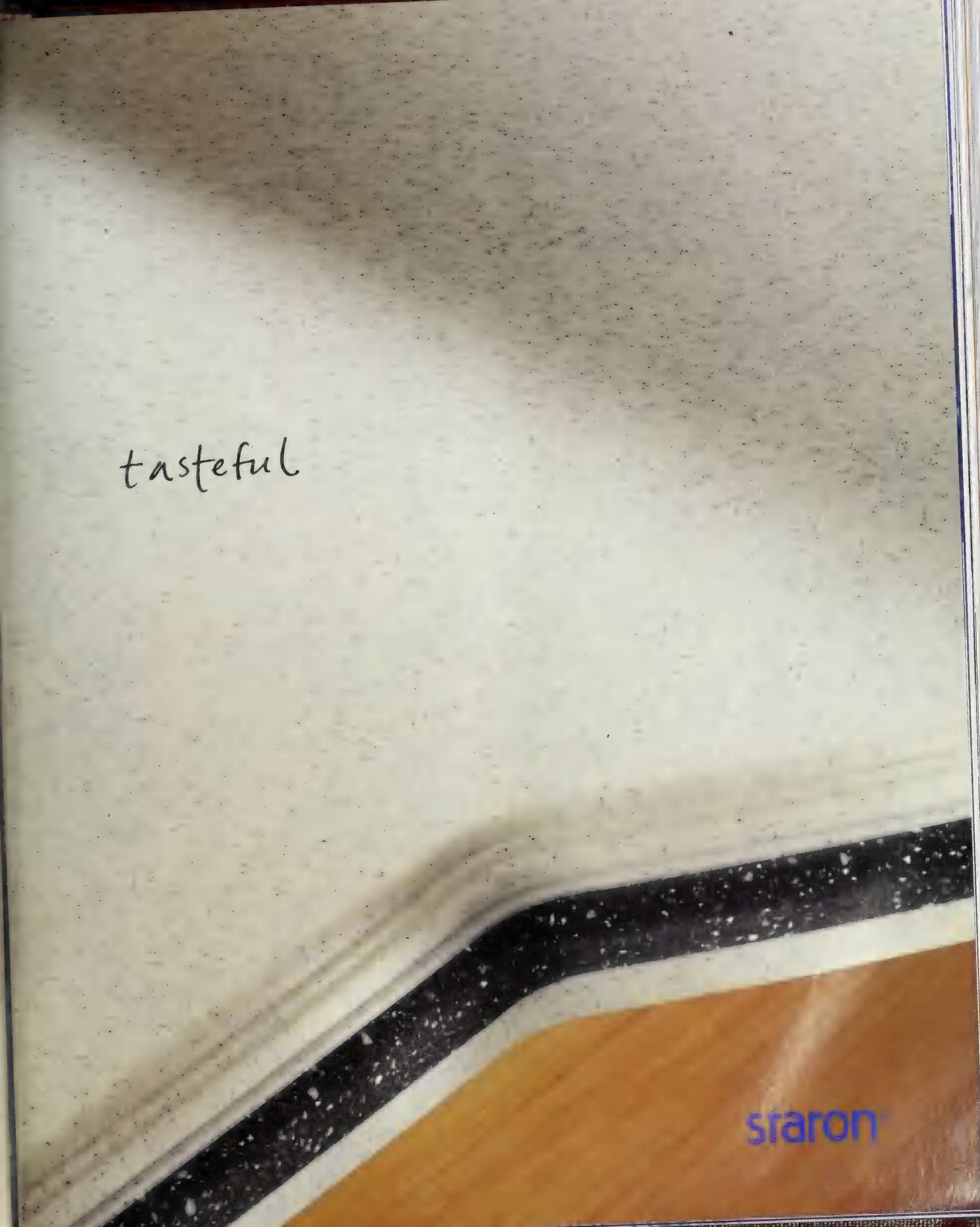
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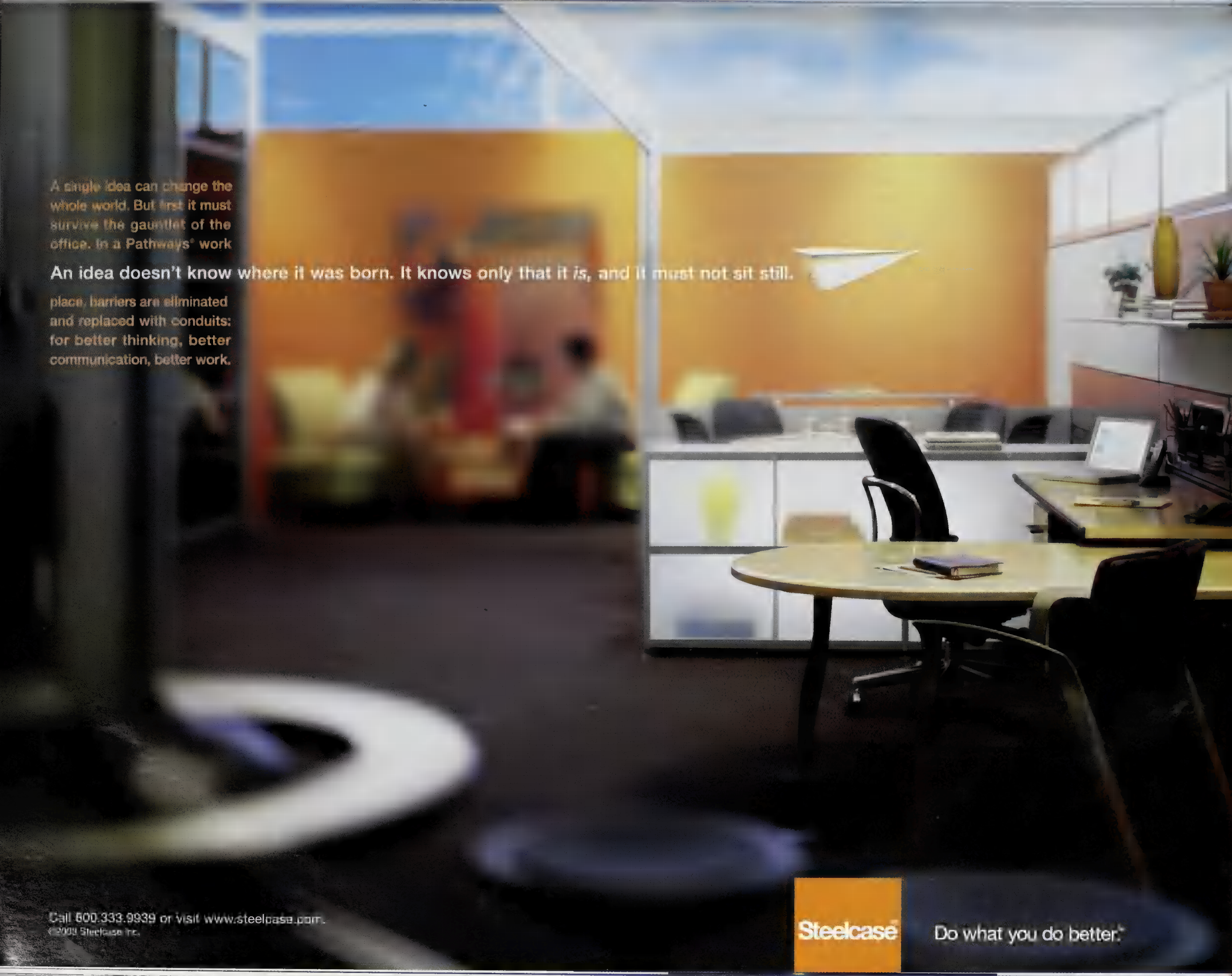

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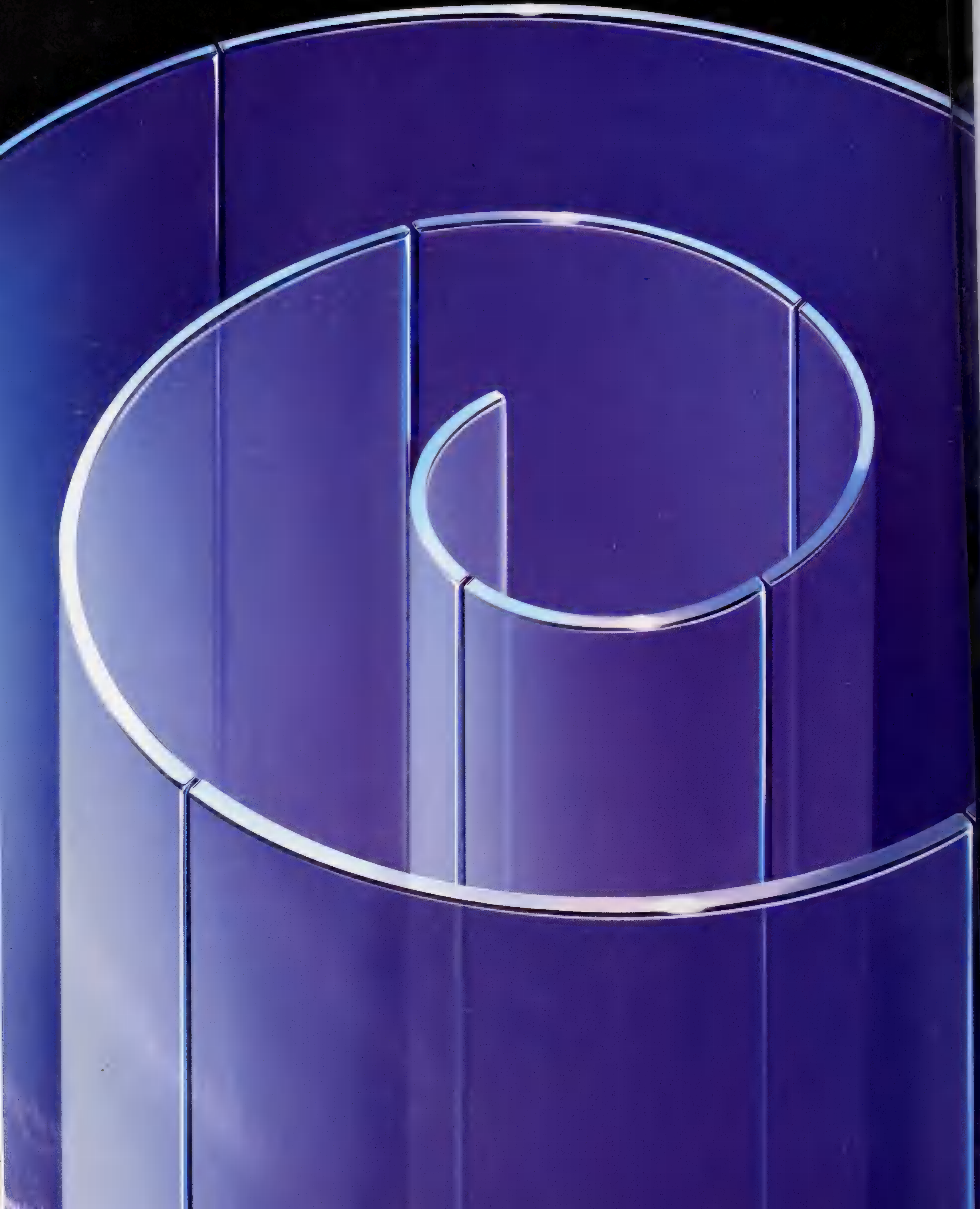

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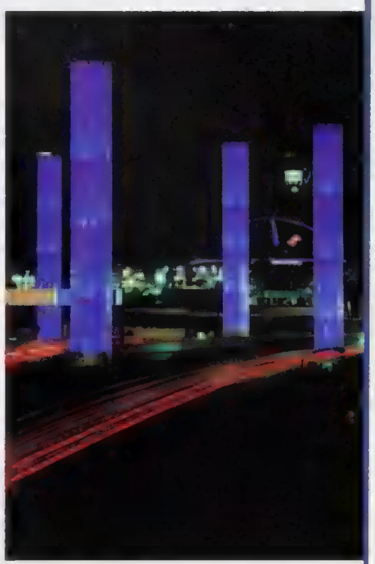

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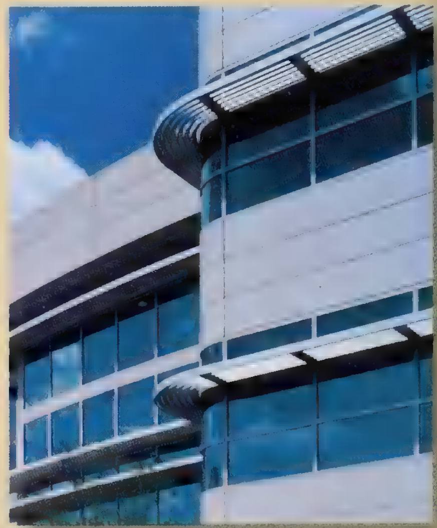

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Design: Features several extra projects from Freecell, this month's emerging firm from Brooklyn. Freecell, a Brooklyn, New York firm, has created a line of furniture which produces enough income to allow the firm to work on lower profit architectural projects.
Work: The full version of the magazine's story on the Rose Fellowship, including a link to the fellowship's application information.
Live: A selection of entries from an art exhibition sponsored by Bay Area Young Architects. The web gallery features many projects that we didn't have room for in the magazine. Plus, more news and features from the world of the emerging architect.

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Digital Practice

Connect to High-Tech Resources through product vendor guides and software reviews with links to manufacturer's Web sites. **New this month:** The Digital Feature on Columbia's Low Library will be enhanced with a multi-media walkthrough of the completed dome, and digital documents detailing the laser measuring process that restored it.

Interiors

Step Inside. Links to the people and products behind the projects, and a special look at New York's new Burberry store.

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Project Portfolio

Walk This Way. Link to the people and products behind this month's projects. Multimedia extras include a walk-through of the newly-restored Lever House. Plus links to the people and products behind the Fort Worth Museum of Modern Art and Silodam.

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BTS: Schools

Photograph © Greg Hursley

Go to the Head of the Class. Browse March's **Expanded Building Types Study,** features ten web-only extras complementing the magazine's coverage, with schools from coast to coast and several stops in between. Plus, find project descriptions, plans, specs, photos, and links to people and products involved.

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Lighting

Simply Brilliant! *Record* features links to the people and products behind lighting in clubs, churches, and schools.

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Green Architect

Is This Product Green? Find Web-only product reviews, links to manufacturers and weekly Web features on green projects and issues.

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In the Cause of Architecture

Coming This Month: We launch a series of articles based on issues raised by the rebuilding of the World Trade Center, beginning with an appraisal of Daniel Libeskind's design for the site.

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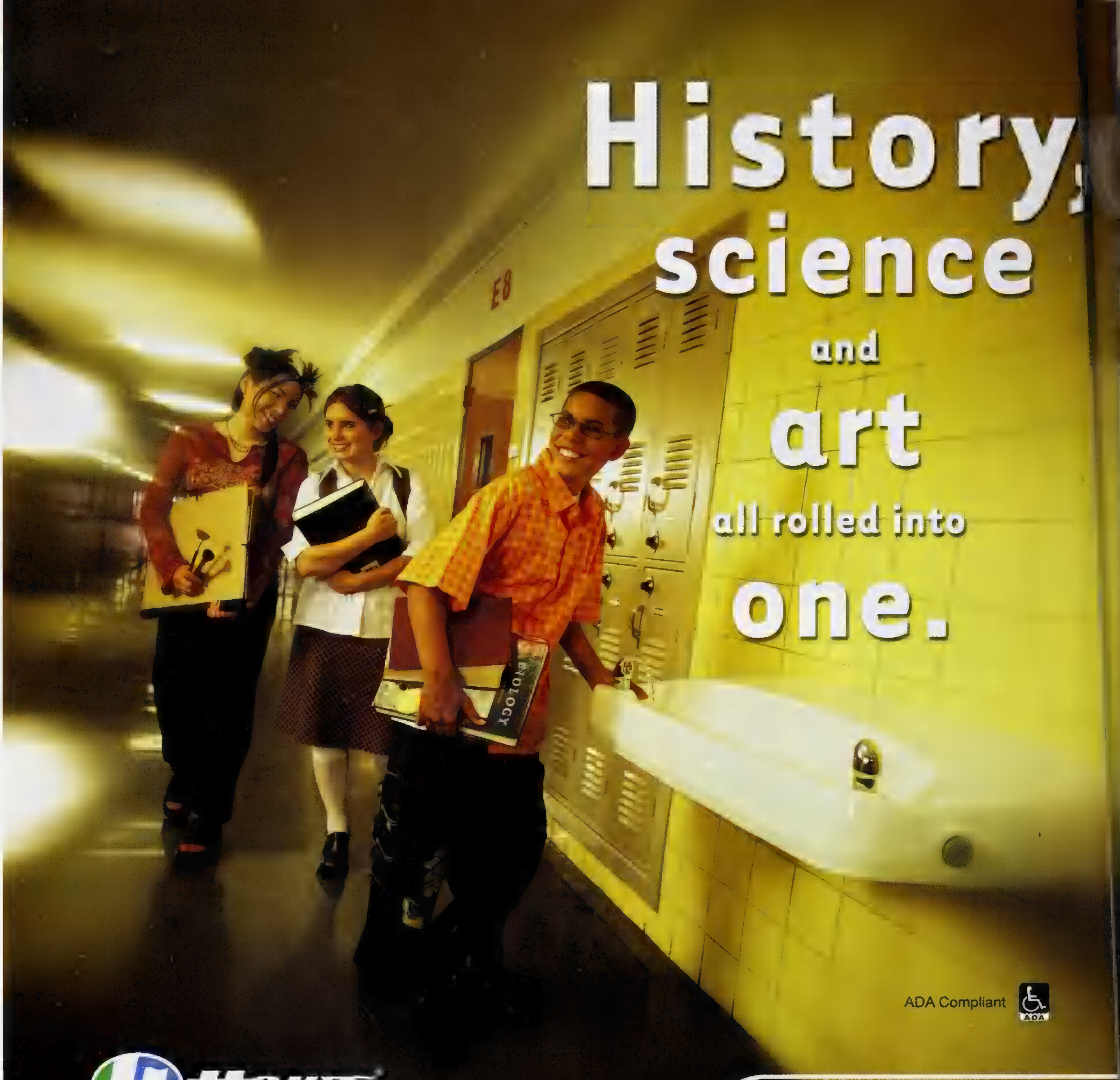
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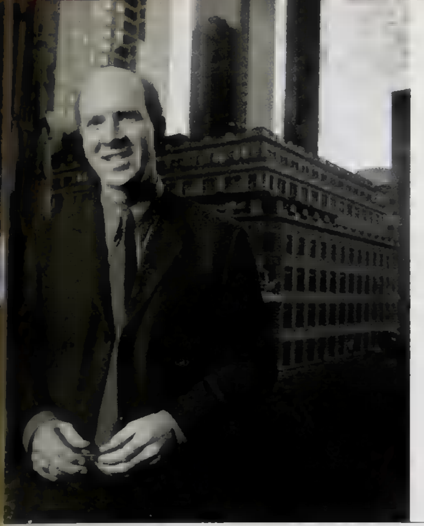

Editorial

Whaddya think?

By Robert Ivy, FAIA

A woman walks into a bar. Seated at the barstool, wide-eyed, poised and expectant, she is about to raise a drink to her lips when the bartender, a grizzled New York type, leans across the counter and asks, conspiratorially, "So, whaddya think about Daniel Libeskind?"

As funny as it sounds, it's a true story—one that exquisitely sums up a moment, encapsulates it within a specific milieu, and the words would make the pitch-perfect line for a New Yorker *cartoon. When she described her actual experiences in the saloon, the woman in question, an architectural historian, had been making a larger point that architecture had decisively entered the popular consciousness. She recounted her encounter with a kind of bemused awe, but it also made a hee-haw tale, a slap-your-leg line right out of Letterman. If the fragile world finds itself longing for good news, here, at least, was one happy improvement we are pleased to report: Architecture has finally gone mainstream.*

"So, whaddya think about this Daniel Libeskind guy?"

While the story exaggerates the depth of change, isn't the news astounding? For decades, we architects have been ruefully, poignantly describing the heightened state of European cultural consciousness, an idealized realm in which taxi drivers have opinions on the latest works by heroic designers, and racks brimming with consumer magazines present architecture like so many plums or pears. Pick a design; they're perfectly ripe this month and ready for tasting.

In architecture as in plums, however, reality includes the pits. While Libeskind and Viñoly, Schwartz and Ban may make the front page of USA Today, *the depth of our national dialogue on architectural matters remains pitifully thin, limited to the superficial image or the emotional, knee-jerk reaction—a battle to the finish of the cool eyeglasses. How can we translate this hype or the heightened public interest to good effect?*

Sometimes, words fail us. It seems clear that architecture needs a new language, new words and symbols to explain its character and richness, if we hope to engage our audiences any deeper than the dazzling first impression or the star turn. Up to now, when trying to explain architecture's three-dimensional potential, we have had to rely on a jargon-laced vocabulary that reduces us to babbling pseudo-intellectuals, waving our arms about and speaking in an incomprehensible tongue. Naively, we decry how the public just doesn't get it.

Here, finally, is our chance. The spotlight is focused on architecture with a capital A. By paying attention to our audience, then clearly stating our arguments and contributions, architecture can rise from the arcane to the universal. We need a simplified message. Every person needs shelter. We can provide habitation with a difference, altering and improving consciousness, the sense of potential, even productivity. Our work can reduce wasteful consumption of resources, harness the winds, channel the sunshine and the rain. Given a confluence of the client and the times, and employing our personal gifts, the we can translate the inanimate into poetry, capturing aspirations or even grief in concrete and glass, stone and water and steel.

If bartenders are interested, and they know our names, we architects would be fools not to care. The time is right for clarity and for forceful, engaged presence, with our clients and the communities we serve. It's time to step out of the shadows, into the limelight. Now, whaddya think of Daniel Libeskind? Got a meaningful, ready answer? It's no joke.

Robert Ivy

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Letters

Reality or Renaissance?

Too much of the debate around proposals for the site of the former World Trade Center has consisted of ideological noise, awed blather, and expressions of personal taste about which proposal is spectacular enough to match the enormity of the destruction of September 11. However, the spectacular may be the enemy of the good, especially when we are seeking an effective memorial that will not only honor the dead and their survivors but also reinscribe the memory of the man-made catastrophe for generations to come.

Yet the more stunning, fabulous, and dazzling the design, the further it departs from the familiar, the more it is likely to receive good press and public attention. Almost all the projects but Peterson/Littenberg's scheme are in this sense spectacular. In THINK's open framework twin towers, the ratio of structure to usable area would make it the world's most spectacular and expensive cultural billboard; it wows exhibition visitors with a dazzling three-part-sequence illumination scheme that would trump Times Square's. And United Architects and SOM's "cities in the sky" are retro-spectacular—they would actualize visions of "New York in the year 2000" originally published by King's Views in 1908.

What does this mean for the context of the memorial, which will be the subject of an international competition this year? Unlike Maya Lin's Vietnam Veterans Memorial, the commemorative space at Ground Zero will not be a symbolic tomb but an actual one, where more than 2,800 people lost their lives. Nor will its purpose be to create a muted, neutral ground for national reconciliation. Rather, it will need to provide a place for the families of the deceased to grieve alone and with others who shared this unbearable experience, and a place for visitors to reflect upon the troubling, perhaps unanswerable questions regarding the meaning of the event. For such purposes, spectacular-ness is an unwanted distraction.

Two of the most enduring purposes of memorials—as demonstrated in Oklahoma—are to provide a place for grieving and for public recognition of the event that caused the suffering, helping survivors transform their present trauma into a more tolerable memory. For these purposes, Norman Foster's proposal of a descent on foot into the depth of the site and into a silent space from which only sky is visible suggests a powerful experience, more conducive to reflection than climbing to a viewing platform many stories above ground, to survey the scene and the place on the ground where the towers once stood. The proposal by the team of Meier, Eisenman, Gwathmey, and Holl represents the opposite, a memorial that is a kind of mapping of the fallen bodies, freezing the moment of horror into a perpetual present, and thus casting a permanent shroud over the place.

The means of access to the memorial site is also central to the experience. Several of the proposals favor mediating access through a museum. In Libeskind's proposal, a hovering overhead museum is the access to the memorial site, which would be the vast underground area defined by the "bathtub walls" and shared by the Path train rails. Other proposals would have visitors trundle though interior underground concourses before reaching spaces circumscribed by the footprints, presumably (although not yet explicitly) lined with shops and other commercial amenities. United Architects' version of this scenario turns the footprints' memorial site into a kind of monumental lobby for the transportation hub, cultural facilities, and shops.

If we neglect these issues, we risk letting the spectacular quality of the design overwhelm the memorial, either by dispersing its location or by subsuming it within the concourses for the cultural facilities, or commercial and transportation spaces. Saving the memorial site from future oblivion is the most important decision facing the LMDC at this time.

—Susana Torre
New York City

Thoughts about Lower Manhattan

On September 12, 2001, I began receiving phone calls from magazine and newspaper reporters asking what should be built on the World Trade Center site—replicate the towers, build taller, build smaller? My own emotional response made it very difficult to imagine that the first question on reporters' minds had to do with the built form. I replied then and remain steadfast in believing that this is the least relevant question to be posed in the wake of this tragedy and yet, even today, the dominant coverage in the press focuses on alternative schemes for building form.

In those days following 9/11, I thought a great deal about the opportunity to create a forward-looking model for the planning of dense urban environments presented by this site being so closely watched by the entire world. Great districts within cities, truly sustainable because people want to live, learn, work, and play there generation after generation, have little to do with skyline imagery. They're founded on the way the mix and blend of uses has evolved to become a community at the pedestrian level. Where is the urgency to find, not skyline sculpture, but a methodology for planning urban settings that we're proud to display to the world?

Planning must start with commerce, the industries that generate a community's reason for being. If we assess the core nature of Lower Manhattan, we find the densest, richest assemblage of financial services and trading entities in the world, offering an unparalleled opportunity to bring the finest school of economics and finance together with the institutions that provide students, research, and ideas. This symbiotic relationship has developed around major universities where commerce and academia form an intense partnership resulting in the rich innovation that has made America the envy of the world. What incentive would attract such an institution? Because in its wake would come the diversity of people and uses that bring urban vitality and around-the-clock activity.

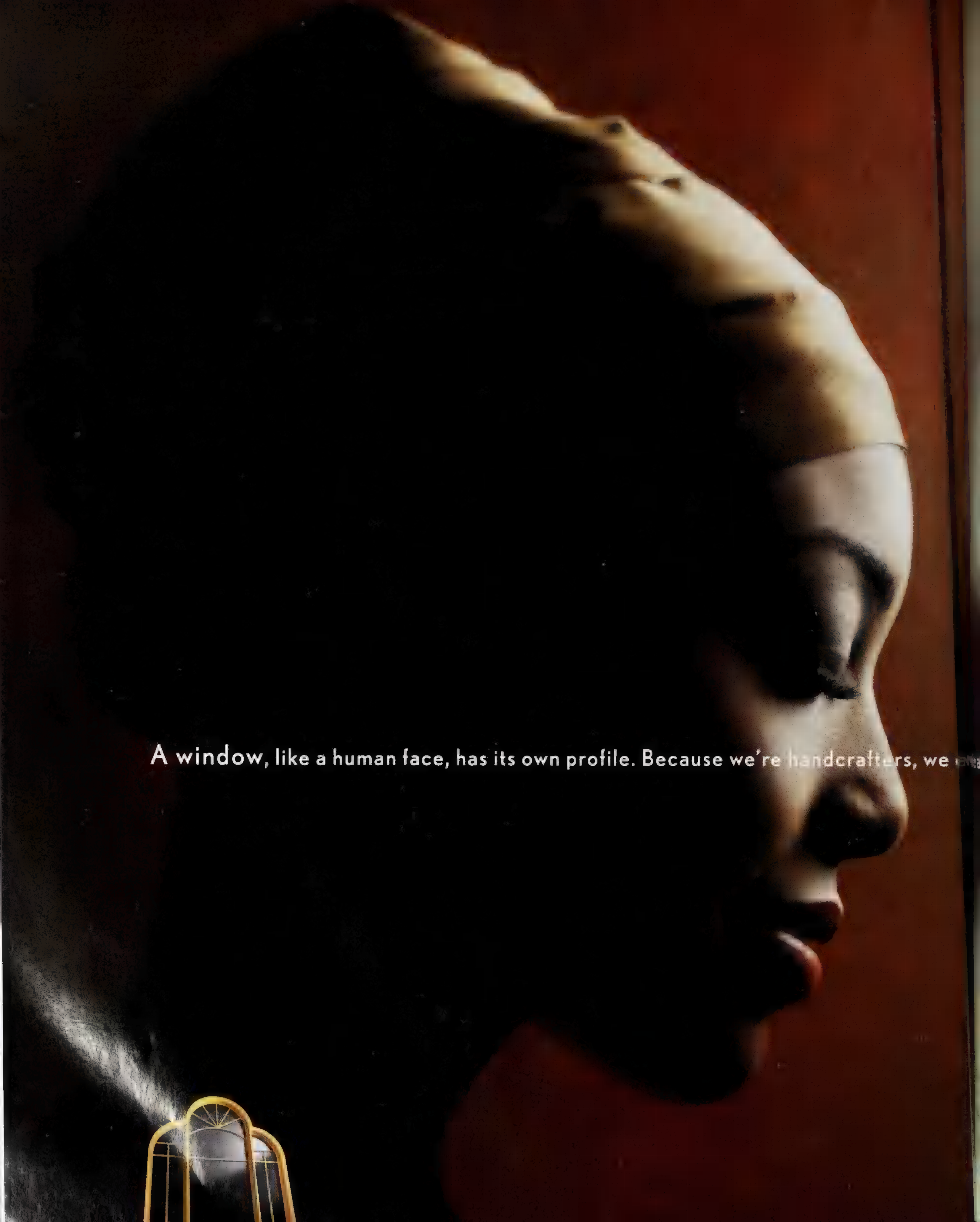
In today and tomorrow's livable communities, residential, retail, work, education, along with civic and spiritual uses will meet the ground, not the sky, offering spaces and places that foster rich human interaction, meaningful emotional experience, and the memorable settings in which we live out our lives. Let's focus for a time on the ground, developing the planning and economic environment that will attract a mix of uses to make a true community. Let the skyline emerge from that strategy.

—Ed Friedrichs, FAIA
Gensler Architecture Design & Planning Worldwide
San Francisco

Corrections

In the February 2003 issue, a credit for Oldcastle Glass, Cleveland, was misspelled [page 166]. In the January 2003 issue, on pages 181 and 182, photo credit should have been given to Benjamin Segal.

Send letters to rivy@mcgraw-hill.com.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Record News

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Rem and RTKL in Beijing p. 34
CHA accused of steering poor p. 36
New York's West Side plans p. 40

REBUILDING LOWER MANHATTAN

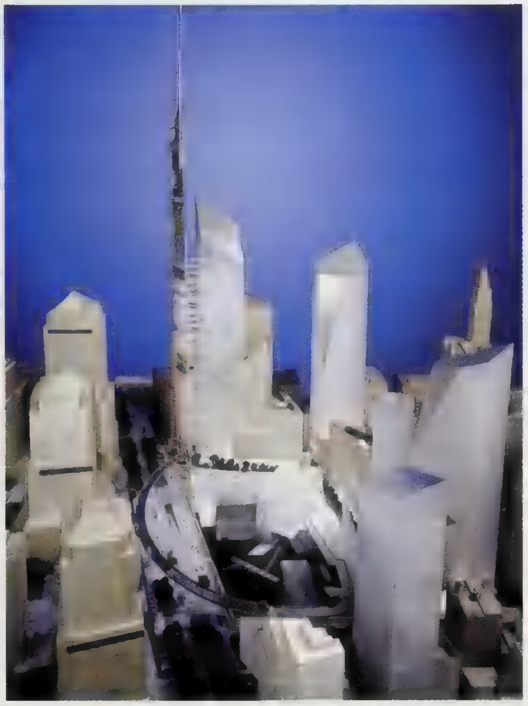
Libeskind and Think move forward in process to design WTC site

As we go to press, the vision of the future of Ground Zero has come somewhat more into focus as the selection of a winning team and land-use plan for the site is now imminent. At this time, a decision by the Lower Manhattan Development Corporation (LMDC) is expected by early March.

The LMDC and the Port Authority of New York and New Jersey selected two plans in early February as finalists out of the nine that were presented by architecture firms in December, 2002 [RECORD, February 2003, page 31]. The scheme by Studio Daniel Libeskind, and the World Cultural Center plan by the Think team, led by Rafael Viñoly, FAIA, and Frederic Schwartz, AIA [see Commentary, page 65], emerged as finalists.

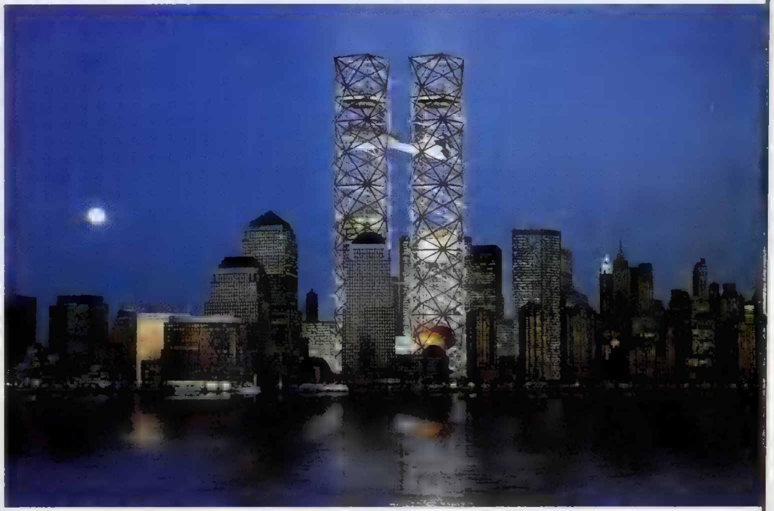
In February, Libeskind and the Think team were modifying their designs based on input from the LMDC and the Port Authority. Roland Betts, the chair of the LMDC planning committee and a member of the LMDC board, said, "What we are not saying is that these plans are set in stone. The core idea of each plan will be preserved. Our goal is not to compromise but to make them better."

Libeskind's scheme calls for a 1,776-foot-tall tower with the "Gardens of the World" at the top.



The most dramatic component of his plan includes a memorial space set some 70 feet below grade on a bedrock foundation with the exposed slurry wall on the west. An elevated walkway encircling the site constitutes a memorial promenade.

Think's World Cultural Center, containing two 1,600-foot-tall open latticework towers with cultural facilities, does not require an office structure to create the skyline element that the LMDC has asked for. The Think towers would be built above and surround the World Trade Center (WTC) tower footprints.



The latticework Think towers (above) have cultural components embedded within, while Libeskind's tallest tower (left) has a garden at the top.

PHOTOGRAPHY: © THORSTEN SEIDEL/STUDIO DANIEL LIBESKIND (LEFT); THINK (RIGHT)

The governor weighs in

The New York Times reported on February 20 that New York Governor George Pataki had expressed support for the Libeskind design. Mayor Michael Bloomberg also expressed support for the Libeskind plan. Governor Pataki's support would carry a lot of weight in the decision process because he jointly controls the Port Authority of New York and New Jersey with Governor James McGreevey of New Jersey.

In February, developer Larry Silverstein, who holds the lease for the WTC office space, did not seem too keen on either of the two finalists. He told the *New York Post*, "I don't understand these latticework towers [by Think], how they would be utilized. The evacuation requirements would be massive."

The *Post* also reported that family members of victims of the 9/11 attack were outraged at news that the Port Authority plans to construct a bus terminal in the "bathtub" near Liberty Street, with a garage entrance "under one of the tower footprints."

The finalist teams have been modifying their designs to accommodate a number of underground uses, such as retail, parking, and a transit hub, while at the same time leaving the footprints of the WTC towers untouched and saving a space for a memorial.

In terms of overall square footage, the finalists both have accommodated more than two times the retail space in their plans than before 9/11 (see plans, next page). Think has proposed about 8.6 million square feet of office space in eight buildings, and Libeskind included 7.6 million square feet of offices in five buildings.

The transportation mix

In February, New York's Governor Pataki described plans for a total of

WWW The LMDC was expected to select a design for the WTC site by early March. To learn more, and to see all of the architects' schemes, visit **www.architecturalrecord.com.**

REBUILDING LOWER MANHATTAN

OFF THE RECORD

New York City's Columbia University has hired Renzo Piano Building Workshop and Skidmore, Owings & Merrill to develop a master plan, considering whether the school should expand on its existing campus or develop satellite campuses.

Submissions for the AIA's Young Architects Forum Leadership Awards are due March 19. Visit www.aia.org/institute/yaf for more information.

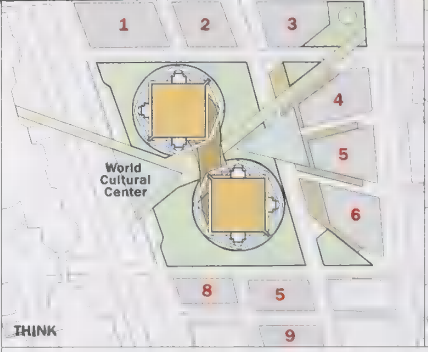
A competition has been announced for design ideas for reuse of the High Line elevated rail structure in New York City. Registration is due April 25 and entries are due May 16. Visit www.thehighline.org for information.

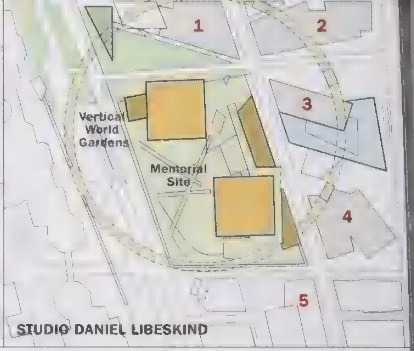
A new Web site highlights the Hopewell Baptist Church restoration project in Oklahoma City [RECORD, February 2003, page 63]. Visit www.goff-hopewell.com.

The Art Institute of Chicago has announced that it is scaling back its planned addition by Renzo Piano. Originally proposed as a 290,000-square-foot structure with 75,000 square feet of gallery space, the addition is now planned for 220,000 total square feet and 60,000 square feet of galleries.

The Ackland Museum of Art at the University of North Carolina at Chapel Hill has named New York–based Polshek Partnership to design an expansion that will double its current size with galleries and teaching space.

The San Fra[illegible]o Museum of Modern Art will present [illegible]xhibition entitled *ROY / design seri[illegible]* featuring the work of New York arc[illegible]ct Lindy Roy [RECORD, December 20[illegible] page 73], April 19 through August 24.





(ALL FIGURES IN SQUARE FEET)

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Building 2	621,000	Parcel 2	2,000,000
Building 3	752,100	Parcel 3	1,200,000
Building 4	1,935,200	Parcel 4	2,000,000
Building 5	1,970,600	Parcel 5	230,000
Building 6	795,800	**TOTAL**	**7,630,000**
Building 8	213,000		
Building 9	1,870,300		
TOTAL	**8,558,000**		
HOTEL			
Building 7	**658,300**	Part of parcel 3	**700,000**
HOUSING			
Building 8 (optional)	**213,000**	Parcel 5	**1,745,000**
RETAIL			
At and below grade	**1,095,000**	At, below, and above grade	**900,000**
CULTURAL SPACES			
Museum	**200,000**	Museum	**180,000**
Performing arts	**180,000**	Performing arts	**325,000**
Conference center, school and library	**400,000**	Vertical gardens	**24,000**

Source: Lower Manhattan Development Corporation and The New York Times

(continued from previous page) $5 billion for Lower Manhattan transportation improvements that could take at least a decade to construct. This would include $1.7 to $2 billion for a transportation hub at the WTC site itself for PATH commuter trains, $750 million for a multilevel transit center at Fulton Street that would serve nine subway lines and be connected to the proposed PATH terminal, and $400 million for a new South Ferry subway station. Other preliminary proposals include rail links to the airports, bus facilities, and a series of new ferry terminals.

Other downtown work

The LMDC has retained firms to develop a plan to enhance Fulton Street, a major east-west street from the WTC site to the East River. Gensler will provide retail and arts/entertainment-planning consulting services for the Fulton Street plan, and Robert A.M. Stern Architects, retained in November 2002 as in-house urban design consultants to the LMDC, will develop an urban design concept plan for Fulton Street. The New York firm Smith-Miller + Hawkinson, also retained in November 2002 by the LMDC, will provide an urban design and planning study of the Wall Street area. On the team with Smith-Miller + Hawkinson are Ralph Lerner, D.I.R.T. Studio, and Sam Schwartz Company for traffic and transportation design.
John E. Czarnecki, Assoc. AIA

R.Dot recommends new retail corridors in Lower Manhattan

Rebuild Downtown Our Town (R.Dot), a community advocacy group for Lower Manhattan, has issued a position paper entitled "Retail: Strategies for Revitalizing Lower Manhattan." The paper recommends several specific strategies for attracting retail to the neighborhoods of Lower Manhattan as a stimulus to future growth.

"Normally, retail is market-driven," says Beverly Willis, FAIA, cochair of R.Dot. "And September 11 created a catastrophic nonmarket in the area. But even before that, there was insufficient retail to support the community, and then 750 stores were destroyed."

R.Dot undertook a study of current downtown neighborhoods in order to identify shopping districts, retail destinations, and retail corridors. In addition to these, the report suggests recommended new retail corridors along streets in underserved neighborhoods. The paper's specific recommendations include offering incentives to major retailers that would serve as destinations, increasing foot traffic in the neighborhood, and allowing smaller stores to grow organically. The report also advocates limiting retail in any new development on the site of the World Trade Center, in order to avoid siphoning retail traffic away from surrounding neighborhoods. The group suggests creating pedestrian-only shopping zones in the historic district, creating another catalyst for the return of retail to the damaged neighborhood. R.Dot presented its findings to the Lower Manhattan Development Corporation, the Port Authority of New York and New Jersey, as well as to the state and city of New York. ***Kevin Lerner***

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Photographer: Mick Hales

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OFF THE RECORD

The International Exhibitions Bureau has named Shanghai as the host city for the World Expo 2010.

The United Kingdom's Foreign and Commonwealth Office has named a shortlist of six firms to design a new British embassy in Warsaw, Poland. The finalists are David Chipperfield [illegible] Roger Hare Architects, and Denton Corker Marshall. A winner will be announced in May.

Kimberli Meyer has been named director of the MAK Center for Art and Architecture, in Los Angeles. Trained as an architect, Meyer has been a curator and artist for more than a decade.

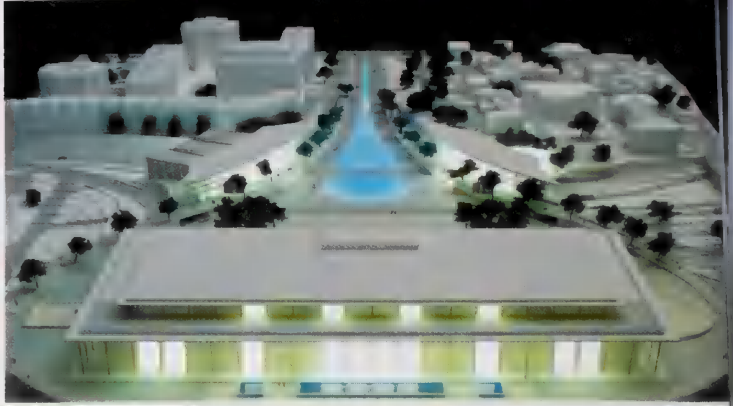
Tod Williams, FAIA, and Billie Tsien will receive the 38th annual Thomas Jefferson Foundation Medal in Architecture at the University of Virginia on April 11.

The University of California, San Diego has selected LMN Architects, of Seattle, with Mathes Brierre Architects, of New Orleans, to design a 78,000-square-foot building for the school of music. Other firms considered were BOORA Architects and Hardy Holzman Pfeiffer Associates.

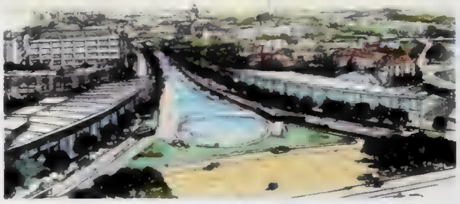
Five firms are on a shortlist to design the Montreal cultural and administrative complex: Busby + Associates Architects, of Vancouver, Cohlmeyer Architects, of Winnipeg, De Architekten Cie, of Amsterdam, and NOMADE Architecture and Saucier + Perrotte Architectes, both of Montreal. Concept sketches are due in April.

Los Angeles architect Richard Keating has merged with Chicago's DeStefano + Partners to create DeStefano Keating Partners. The new firm will maintain Los Angeles and Chicago offices. Keating and Jim DeStefano had both been SOM partners.

Viñoly wins Kennedy Center project



The Kennedy Center (in foreground, above) will have a plaza extending to the east with two new buildings (left).



The Kennedy Center for the Performing Arts has chosen Rafael Viñoly to design its expansion, which will be located on an 8-acre corridor immediately east of the Washington, D.C., complex. The project requires building a deck over the Rock Creek Parkway and Potomac Freeway. Currently, these roads isolate the Edward Durrell Stone–designed building from the rest of the city.

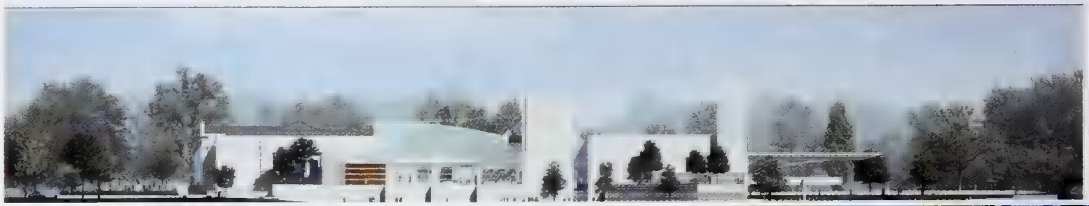
The announcement follows a September authorization by Congress to build this plaza. Terminating at 23rd Street NW, the $400 million deck will improve pedestrian and local traffic connections to the performing arts institution. The Kennedy Center selected Viñoly from a list of international architects.

Viñoly's design for the plaza promotes further integration into the urban fabric. A drive and walkway surround a wedge-shaped, cascading fountain. The water element ends in a circular pool that references the Reflecting Pool in front of the Lincoln Memorial. Viñoly says that the footpath will wrap around the Kennedy Center in an oval, to echo the city's other memorial sites.

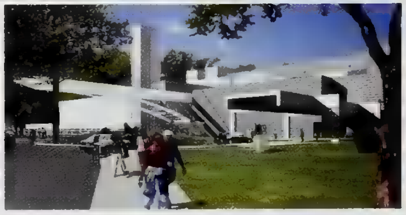
Also proposed is a westward extension of the plaza to create a viewing platform over the Potomac River. Viñoly calls the strategy "a way of going onto the water without touching the water, which is quite moving." Moreover, it will allow direct pedestrian connections to the waterfront and Lincoln Memorial.

The Kennedy Center expansion includes the construction of two buildings to house the center's education programs as well as rehearsal and office spaces. Although their design is preliminary, the glass-and-steel buildings comprise 400,000 square feet and will introduce a second architectural vocabulary to Stone's 1.5 million-square-foot structure, because, Viñoly says, "to compose them as an extension of the center challenges its integrity as a memorial."

The Kennedy Center must raise $250 million in private contributions to build the structures. Ground breaking for the 10-year project is not yet scheduled. *David Sokol*



Cleveland Museum unveiled by Viñoly



The long, linear museum (top) will include a dramatic glass canopy (above).

New York architect Rafael Viñoly is busy with a number of notable commissions, including a $225 million addition to the Cleveland Museum of Art. In mid-February, Viñoly showed his design for the project, which has a targeted ground breaking in 2004, with completion in 2009.

The project, Viñoly's largest museum commission to date and the largest cultural project in Cleveland's history, will include demolition of nearly half of the museum's five-building complex for the new construction. Two new curving wings will be built to the east and west of a 1916 building. Additions built in 1958 and 1983 will be removed for better circulation through the complex.

A cantilevered glass canopy will lead to a 38,000-square-foot courtyard that will have large-scale sculpture. The addition provides close to 40,000 square feet of new gallery space—a 42 percent increase from the existing museum.

A 1971 addition by Marcel Breuer will be renovated as a new Life-Long Learning Center, providing a hands-on educational experience for families.

Viñoly's design awaits museum board approval. The project was initiated with a 1999 facilities master plan by New York firm Cooper, Robertson & Partners. *J.E.C.*

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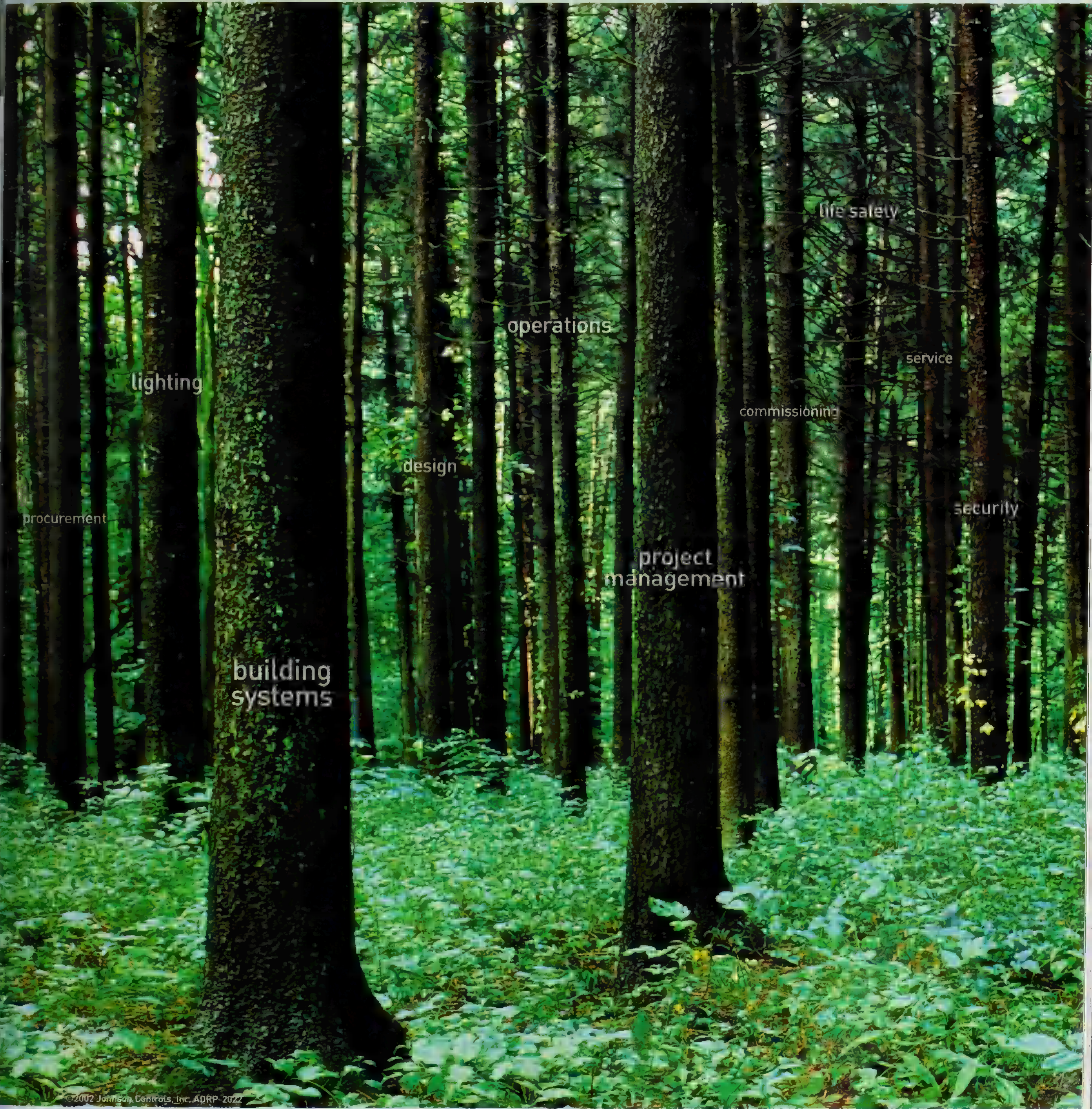

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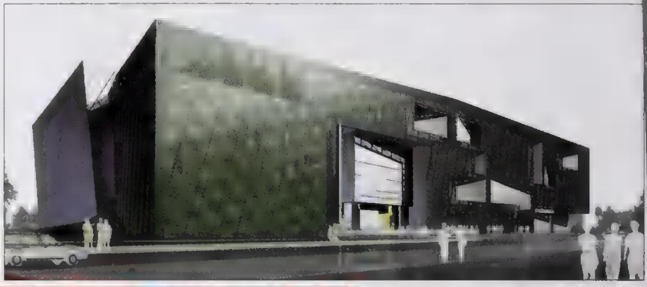
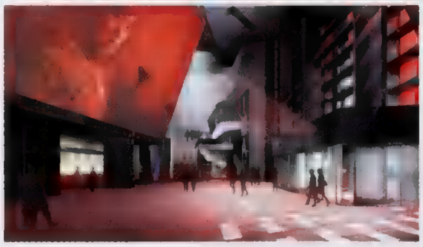
RTKL wins competition for Chinese Museum of Film in Beijing





Clad in a metal mesh (above), the museum will have projections inside.

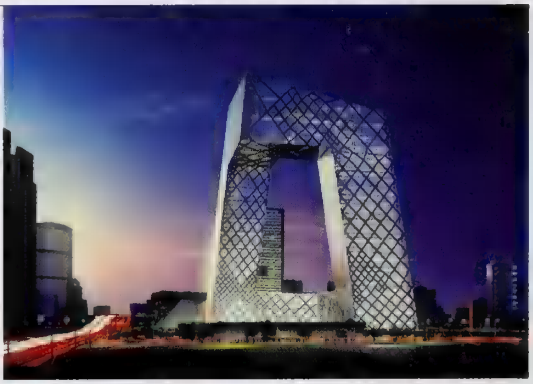
RTKL has won an international competition to design the Chinese Museum of Film in Beijing. The project is part of the city's cultural improvements program that coincides with the 2008 Summer Olympics in Beijing. Ground breaking was held in November 2002 for the museum, which is the first to be dedicated to the history of Chinese filmmakers.

The competition, organized by the Beijing Radio, Film and Television Bureau, had a jury process that involved more than 40 people working in the Chinese film industry. RTKL's design was selected among seven finalists from China, France, Germany, Australia, and the United States.

The $40.2 million museum, expected to open in 2005 to coincide with the official centennial of Chinese cinema, will include four floors of exhibition halls for film history, film technology, and exhibitions. A theater component will include an IMAX theater, a 400-seat theater, three review halls, and a multifunctional hall. The 371, 220-square-foot building will also have collection space and research offices. Projected images and built-in lights will illuminate and animate glass walls. A thin membrane of perforated black metal mesh with plants growing behind it will clad the building's exterior.

"The site-specific design takes its cues from a cinema icon, the production clapboard," said Richard Yuen, AIA, a vice president with RTKL and principal in charge on this project. "The 'acting' part of the clapboard is represented by giant translucent glass walls angled toward to main public access, while the museum itself is a simple black box." *J.E.C.*

Koolhaas designs 80-story skyscraper for Beijing



Koolhaas's CCTV will be one of many new Beijing towers.

Construction will soon begin in Beijing on the first skyscraper designed by The Office for Metropolitan Architecture (OMA), led by Rem Koolhaas. The building, a 5.5-million-square-foot headquarters for China Central Television (CCTV), will be among the first of approximately 300 new towers to be built in Beijing's new central business district.

Koolhaas won the commission in August 2002 through a competition with 10 other firms, among them Kohn Pedersen Fox, Skidmore, Owings & Merrill, and Dominique Perrault. Koolhaas was one of three finalists, including Toyo Ito in collaboration with FCJZ of Beijing, and the East China Architecture & Design Institute. A contract was signed in December.

The 750-foot tower will be taller than any extant building in Beijing, though several other buildings currently in planning stages would far exceed its height. A statement by OMA describes the building as "not a traditional tower, but a continuous loop of horizontal and vertical sections that establish an urban site rather than point to the sky. The irregular grid on the building's facade is an expression of the forces traveling throughout the structure." A second, shorter building will house a hotel and a theater.

The $600 million project is expected to be completed by 2008, when Beijing hosts the Summer Olympics. *K.L. and J.E.C.*

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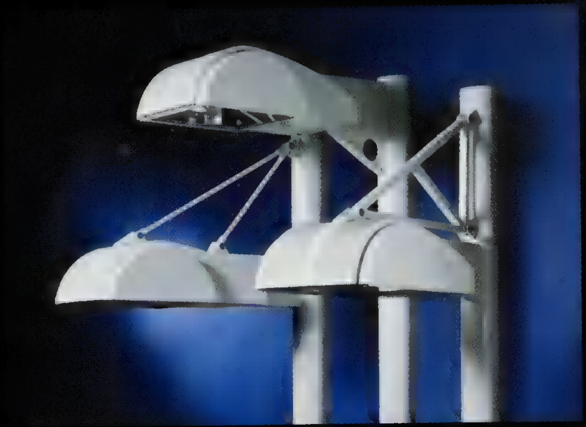

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In Chicago, Stateway Gardens housing rubble (below) stands before two of the remaining towers (left).

CHA accused of steering poor people to poor neighborhoods

While the face of public housing in Chicago is taking a dramatic turn, with demolished towers being replaced by low-rise neighborhoods, the displaced residents are not necessarily moving to better or more equitable situations. In late January, a lawsuit was filed against the Chicago Housing Authority (CHA) charging the agency with steering public housing residents to poor, high-crime neighborhoods that are predominantly black.

The National Center on Poverty Law, with the Chicago Lawyers' Committee for Civil Rights Under Law and Business, and Professional People for the Public Interest, filed the lawsuit on behalf of thousands of public housing residents. The CHA is accused of not providing adequate relocation service to those displaced by demolition, which would be in violation of the 1964 Civil Rights Act and the Fair Housing Act.

A study by the National Center on Poverty Law tracked more than 3,200 families relocated from public housing from 1995 to 2002 with certificates or Section 8 vouchers. The study found that at least half of the families moved to areas with high concentrations of poverty, and 83 percent of the families relocated to neighborhoods that were at least 90 percent black.

The groups that filed the lawsuit are recommending the CHA begin a program of counseling and relocation advice.

In a statement, the CHA said, "We concur that improvements should continue to the service system and elements of our relocation process. However, we feel that the best way to make these changes is not through a lawsuit."

In 2003 alone, 600 families will be involuntarily relocated with Section 8 vouchers. *J.E.C.*

Task force recommends stringent codes for N.Y.C. buildings

The World Trade Center Building Code Task Force of the New York City Buildings Department released a report of findings and recommendations in mid-February as a result of the 9/11 World Trade Center disaster. Patricia J. Lancaster, commissioner of the buildings department, released a total of 21 recommendations, 15 of which would have to be enacted as law, either in the zoning resolution, fire code, or building code. Visit www.nyc.gov/html/dob/pdf/wtcbctf.pdf for the full report.

The 21 recommendations include a call for the end of the use of open-web bar trusses in buildings over 75 feet in height, pending the development of an appropriate standard by the National Institute of Standards and Technology. One of the recommendations that will have the largest impact on owners of existing buildings is a call for full sprinkler systems to be installed in all existing commercial buildings more than 100 feet tall within 15 years.

The study recommends building stairwells to be larger and more numerous, with enclosures composed of more impact-resistant materials than drywall alone, such as adding a layer of sheet-metal ceramic to drywall.

The city hopes to require air intakes in all new buildings to be located at least 20 feet above ground and away from exhaust discharges and off-street loading areas. The study encourages the use of available impact-resistant materials in the construction of stair and elevator-shaft enclosures.

Building owners would be asked to develop plans for fully evacuating office buildings that go above and beyond the floor-by-floor evacuation plans required for fire safety. One recommendation calls for a uniform information card listing a structure's vital features to be available for firefighters and safety personnel. *J.E.C.*

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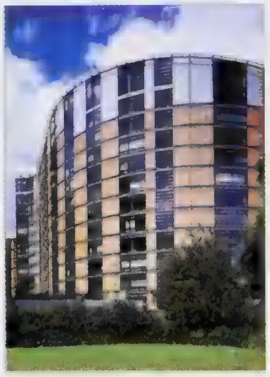

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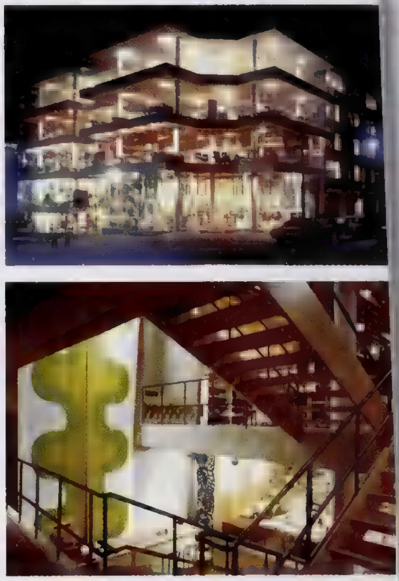
25-year award honors Design Research building

The Design Research headquarters building, completed in 1969 in Cambridge, Massachusetts, has won the American Institute of Architects (AIA) 25 Year Award. This award recognizes architecture of enduring significance completed 25 to 35 years ago. The firm that designed the building, BTA (formerly Benjamin Thompson & Associates), will be honored at the American Architectural Foundation's Accent on Architecture gala on March 8 at the National Building Museum in Washington, D.C.

Situated on Harvard Square, the building stands out from its redbrick neighbors with its tempered glass walls and stepped concrete floor plates. Benjamin Thompson started Design Research as a showcase for well-designed interior fittings and furnishings. BTA abandoned the concept in the 1970s, and the building has served as the East Coast flagship store for furniture retailer Crate & Barrel since 1975. *K.L.*



The Design Research building, now Crate & Barrel, glows like a beacon at night.

Five receive AIA's Young Architects Award

Five young practitioners are being honored by the American Institute of Architects (AIA) with the 2003 Young Architects Award. The award is given to those in the early stages of their careers who have demonstrated leadership in the profession.

The winners include Paul Woolford, AIA, a senior vice president with HOK Architecture, based in Atlanta, who was the 2001 chair of the AIA Young Architects Forum; Lisa M. Chronister, AIA, a project manager with LWPG Architects, Oklahoma City, who led a coalition of advocates to help save the Gold Dome Bank in that city; Paul Neuhaus, AIA, a design/project manager with The Leonard Parker Associates, Minneapolis, who has contributed to community building with his design work for a number of public structures; Paul D. Mankins, AIA, an associate principal with Herbert Lewis Kruse Blunck Architecture, in Des Moines, who has served as the president of AIA Iowa; and Ronald Todd Ray, AIA, principal of Studio27 Architecture in Washington, D.C., who volunteers with the Washington Architectural Foundation Community Design Services. *J.E.C.*

The winners are (from left) Paul Woolford, AIA, Lisa M. Chronister, AIA, Paul Neuhaus, AIA, Paul D. Mankins, AIA, and Ronald Todd Ray, AIA.

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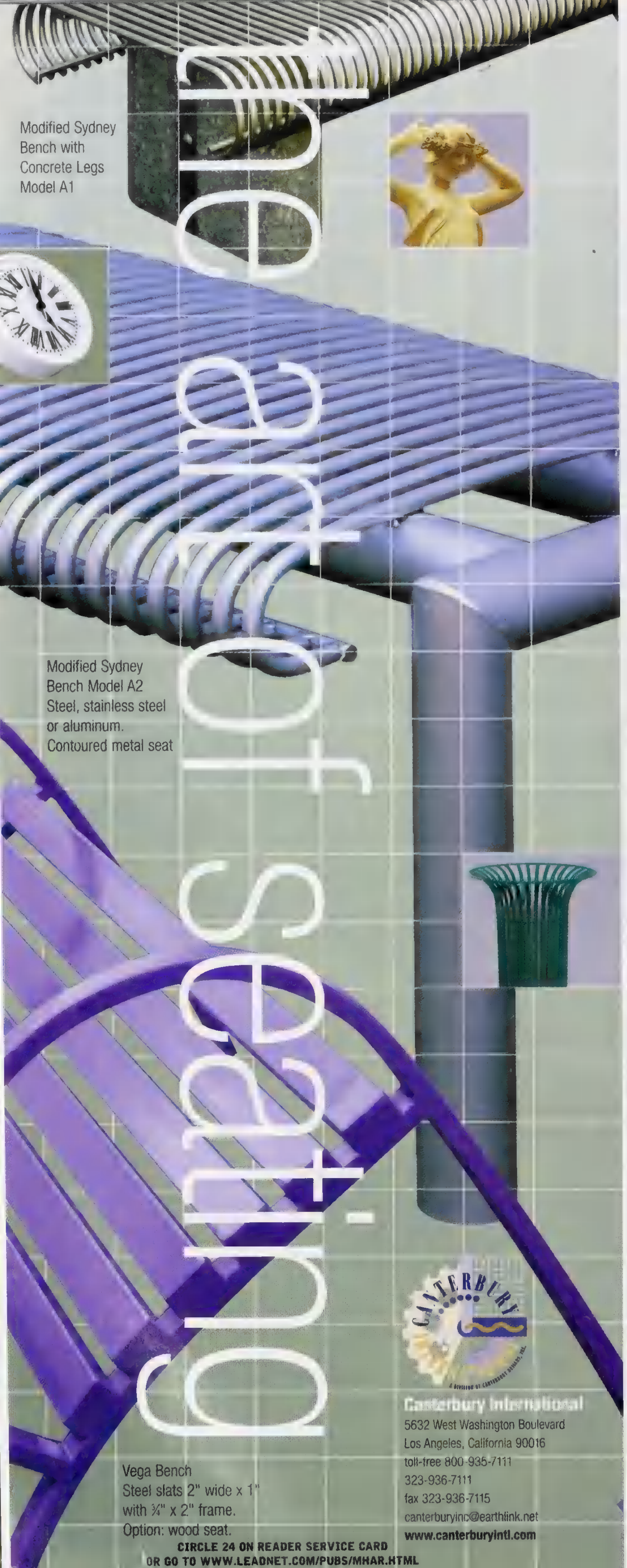

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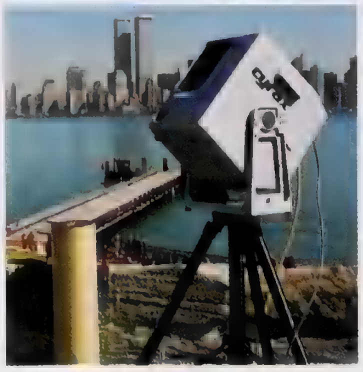

A Cyrax 2500 scanner scans the Statue of Liberty prior to 9/11.

Key U.S. structures scanned, documented

Just days after the attacks of September 11, Architect of the Capitol Alan Hantman, FAIA, commissioned crews to laser-scan the U.S. Capitol building in Washington, D.C. Scanning produces a three-dimensional map of the Capitol so that, in case of destruction, the building can be restored or rebuilt.

The Capitol project, recently completed, represents only the third time in which a national icon has been subject to three-dimensional mapping, says Glenn Hill, an associate professor of architecture and director of visualization at Texas Tech University, in Lubbock. Hill, with professors Elizabeth Louden and John White, is collaborating with the National Park Services' Historic American Buildings Survey to map the Statue of Liberty (scanning at Liberty Island pictured, left). That project is ongoing. Park Service engineers have also scanned the surface of Gutzon Borglum's original 1:12 scale model of Mount Rushmore.

According to Hill, laser scanning can "reverse engineer" buildings like the Capitol, creating as-built drawings accurate within one-quarter of an inch. Reflections from a pulsating laser are mapped to create a three-dimensional point cloud, which is then translated into two-dimensional drawings. The method is more accurate than reverse-engineering strategies such as photogrammetry, especially for nonorthogonal structures like statuary.

Although replicas are only skin-deep and potentially inauthentic, the cultural importance of a landmark like the Capitol would probably ensure its recreation. "I think there would be some value in just having some symbol there, even if it were a replica," says Dwight Young, a spokesperson for the National Trust for Historic Preservation. *D.S.*

New York City pushing plans for rail yards

While international focus is on the future of Ground Zero, New York City officials unveiled a plan in February for ambitious redevelopment on the west side of the city between Eighth Avenue and the Hudson River, from 28th to 42nd Street.

Named the Hudson Yards Master Plan, the proposal has elements that will be key in New York's bid for the 2012 Summer Olympics. The plan includes a $1.5 billion extension of the number 7 subway from Times Square to 34th Street, as well as a $1.2 billion football stadium for the New York Jets built over a deck on top of the West Side rail yards. A commercial corridor between 30th and 34th Streets, from Madison Square Garden to the river, is planned, in addition to office towers along 11th Avenue, a mix of residential buildings and hotels along 10th Avenue, and ferry terminals at 34th and 38th Streets. A call for $1 billion in public funds to expand the convention center to approximately 1.6 million square feet is in the plan. The conversion of the Farley Post Office into a new Penn Station will link the area to the rest of the city and region. *J.E.C.*

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Ann Beha designs renovation of 75-year-old Masonic Temple for the Portland Art Museum

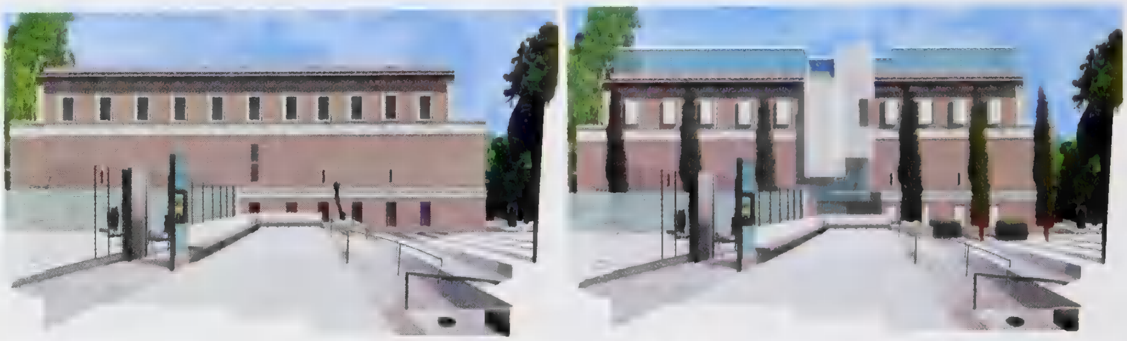
In mid-February, the Portland Art Museum, in Portland, Oregon, presented the city's Landmarks Commission with its plans to renovate the historic North Wing. Boston-based Ann Beha Architects designed the adaptive reuse for the building, a former Masonic Temple. The museum is currently raising funds for the $25 million project; ground breaking is scheduled for this summer, with completion due in August 2004.

In addition to restoring the Masonic Temple's eclectically styled ballrooms, Beha's design for the North Wing (right) includes three major interventions that, Beha says, pursue a vocabulary of transparency and public accessibility. Alterations include replacing the facade behind the main entrance's upper-story colonnade with glass to bring daylight into the foyer.

Two translucent glass monitors will house both the building's rooftop mechanical systems and an overlook. The so-called "penthouses" give the appearance of skylights during the day, and they will glow at night. Moreover, a folded curtain wall of translucent and transparent glass will replace a vertical slice of the building's south elevation. This "pleat" will mark the southern entrance and visually connect the North Wing and the museum's main three-wing complex, designed by Pietro Belluschi.

Built in 1927 and purchased by the Portland Art Museum in 1990, the Masonic Temple is currently used as an exhibition gallery and for office and conference spaces. The pending redesign will add 27,000 square feet of new gallery space on six levels and will include a new location for the museum's library. It will also connect the North Wing to the main building via an underground gallery corridor.

Beha was responsible for two previous redesigns of the museum's Belluschi building, in 1995 and 2000. *D.S.*



On the Masonic Temple (as it exists today, left), a glass-enclosed vertical slice (right) will denote the southern entrance.

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News Briefs

Honorary AIA members named The AIA will bestow honorary membership on eight people at the 2003 AIA National Convention in May: "Boston by Foot" founder Louise "Polly" Flansburgh; structural engineer Jon Magnusson; National Trust for Historic Preservation president Richard Moe; Terrance Flynn, of MBNA America Bank; AIA Arizona executive director Tina Gobbel; photographer Marvin Rand; Crystal Cathedral founder Dr. Robert Schuller; and Dr. Tallman Trask III, a university administrator active in major academic building and development projects.

SOM to design new NATO headquarters The London office of Skidmore, Owings & Merrill (SOM) has designed a new Brussels headquarters for the North Atlantic Treaty Organization (NATO). From an initial pool of 64 firms, 21 competed for the project. Swanke Hayden Connell and Koetter Kim & Associates placed second and third, respectively.

SOM's design for the 172,000-square-foot headquarters is a series of four interconnected low-rise blocks, each with an undulating roof. The building will rise on a 99-acre site opposite the existing headquarters. Although construction costs are not yet determined, NATO officials expect the design to be finalized in 2005, with construction to be completed in 2010.

Maya Lin withdraws sculpture When constructed next year, Portland's new North Park Square will be missing a *Playground*. Designer Maya Lin recently rescinded her sculpture of that name from the $2 million park project due to disagreements with park designer Herbert Dreiseitl. *Playground*, a field of rubber hillocks, would have measured 40 feet by 60 feet. Dreiseitl claimed the sculpture was too large for the park, a one-square-block site in Portland's Pearl District.

SOM's winning design for NATO's new Brussels headquarters (interior, right) includes four parallel low-rise buildings.

Channel glass cladding on the Shaw.

Construction begins on Baton Rouge arts center Construction is under way on the Shaw Center for the Arts, a $50 million multiuse facility designed by Schwartz/Silver Architects of Boston, with New Orleans–based Eskew + Dumez + Ripple and the Baton Rouge firm of Jerry M. Campbell & Associates. The 125,500-square-foot building will incorporate the Louisiana State University Museum of Art, a performing arts theater, and rehearsal and studio facilities, which will open in February 2005.

Schwartz/Silver's design adaptively reuses the 1930s-era Auto Hotel parking garage and other buildings on the site. *News Briefs by David Sokol*

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Bob Day, *President*

Bob Day

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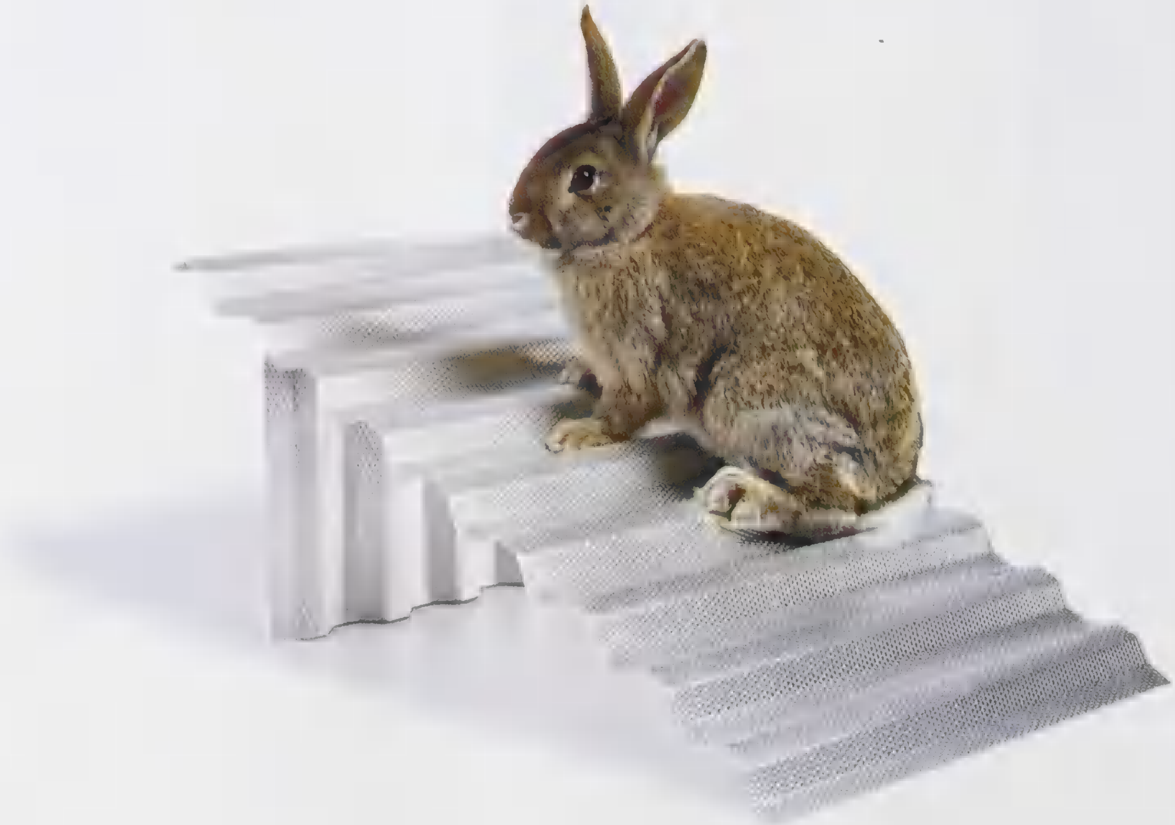

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Dates & Events

New & Upcoming Exhibitions

The Art of Structural Design: A Swiss Legacy
Princeton, N.J.
March 8–June 15, 2003
From New York's George Washington Bridge to Boston's new Bunker Hill Bridge, some of this country's most acclaimed structures are the products if Swiss design. This exhibition celebrates the contributions of a group of highly influential Swiss engineers widely recognized as the most innovative structural designers of the 20th century. At the Princeton University Art Museum. Call 609/258-3788 or visit www.princetonartmuseum.org for information.

Fantastic
North Adams, Mass.
March 8, 2003–Spring 2004
In *Fantastic*, MASS MoCA showcases five contemporary artists—Miguel Calderon, Gregory Crewdson, Alicia Framis, Nils Norman, and artist collective Temporary Services—who embrace a world of hallucinatory, visionary, utopian, and otherwise "fantastic" ideas. At the Massachusetts Museum of Contemporary Art. Call 413/662-2111 or visit www.massmoca.org.

Roy McMakin:
A Door Meant as Adornment
Los Angeles
March 23–June 29, 2003
McMakin became a strong presence in the design scene in 1987, when he founded the Domestic Furniture company in Los Angeles. The exhibition is a mid-career survey of the Seattle-based artist, tracing the development of his career in art and design and his unique manipulations of the traditional definitions of furniture and sculpture. At The Museum of Contemporary Art. Call 213/621-2766 or visit www.MOCA-LA.org.

Of Our Time: 2002 GSA Design Awards
Washington, D.C.
March 27–August 10, 2003
Of Our Time features models, drawings, and photographs of a striking series of federal courthouses, engineering achievements, graphic design, and public artwork representing the winning entries in last year's General Services Administration (GSA) Design Awards. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Picture This:
Windows on the American Home
Washington, D.C.
March 29–August 11, 2003
Picture This presents windows through multiple perspectives and offers an entertaining two-century history of a building element that opens a view into the changing nature of American domestic life. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

ROY/design series 1
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by South African–born architect Lindy Roy will launch the first of an ongoing series devoted to showcasing the work of contemporary designers in architecture, graphic design, and industrial design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

Architecture and Design Permanent Collection
San Francisco
April 19, 2003–ongoing

This exhibition will inaugurate a newly installed, ongoing presentation of the museum's architecture and design collection. Featuring some 100 works of architecture, graphic design, and industrial design from a permanent collection of more than 4,000 objects, the survey will include well-known classics by up-and-coming designers and will highlight special strengths of the collection, including experimental architecture and digital design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

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Harlem Lost and Found
New York City
May 3, 2003–January 4, 2004

This exhibition traces the history of Harlem from pre-Revolutionary times to World War I. Working with consulting curator Michael Henry Adams, author of the book *Harlem Lost and Found: An Architectural and Social History, 1765–1915*, the museum has drawn from its rich collections to add a unique dimension to the story of the neighborhood's architectural richness. At the Museum of the City of New York. Call 212/534-1672 or visit www.mcny.org.

Garofalo Architects:
Between the Museum and the City
Chicago
May–October 2003

An architecturally distinctive, pavilionlike structure designed by architect Doug Garofalo will be the first in a series of MCA commissions for emerging and mid-career architects. At the Museum of Contemporary Art. Call 312/280-2660 or visit www.mcachicago.org.

Ongoing Exhibitions

Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003

Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, this exhibition demonstrates the transformative powers of sustainable design. At the National Building Museum. For more information, call 202/272-2448 or visit www.nbm.org.

Intricacy
Philadelphia
January 18–April 6, 2003

Guest curated by the architect and theorist Greg Lynn, this exhibition includes works by architects, designers, and artists that reflect an emerging sensibility that Lynn has labeled "intricacy." At the Institute of Contemporary Art at the University of Pennsylvania. Call 215/898-5911 or visit www.icaphila.org.

Trespassing:
Houses x Artists
Los Angeles
January 29–April 13, 2003;
May 7–July 27, 2003

The two-part exhibition, co-organized by the MAK Center for Art and Architecture and Bellevue Art Museum, highlights nine new architectural projects developed in a joint effort between

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contemporary artists and architects Alan Koch and Linda Taalman of OpenOffice. The projects engage the house as subject, investigating its forms, functions, and significance while imagining a wide variety of prototypes for living. At the MAK Center for Art and Architecture. Call 323/651-1510 or visit www.makcenter.org.

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural implications regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

David Adler, Architect: The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. At the Art Institute of Chicago. Call 312/443-3600 or visit www.artic.edu.

Conferences, Symposia, Lectures

GlobalShop 2003
Chicago
March 16–18, 2003
GlobalShop is where retailers and brand marketers seek out resources and concepts to define store and brand identity. At the McCormick Place Convention Center. Call 866/933-1001 or visit www.vnuexpo.com.

Coverings
Orlando, Florida
March 24–27, 2003
This event will feature the International Tile and Stone Exposition, the International Flooring Exposition, and the Vision Conference Program. At the Orange County Convention Center. For more information, call 561/776-0600 or 800/881-9400, or visit www.coverings.com.

Lightfair International
New York City
May 5–8, 2003
This year's Lightfair promises to be the biggest and most comprehensive annual architectural and commercial lighting conference to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering, design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit www.lightfair.com.

SIDIM
Montreal
May 22–24, 2003
The Montreal International Interior Design Show (SIDIM) will celebrate its fifteenth anniversary. Over 300 international manufacturers, importers, and designers will present their furniture and designs for office, commercial, and residential space-planning applications. At Place Bonaventure. For information call 514/284-3636 or visit www.sidim.com/.

Competitions and Awards

2003 Business Week/Architectural Record Awards
Call for entries deadline: March 14, 2003
The annual global awards program, sponsored by the American Institute of Architects, invites entrants to submit work that has demonstrated that "good design is good business." This is an opportunity for architects and clients to be recognized for exemplary collaboration between client/architect building teams who use architectural design solutions to achieve strategic goals. To download a submission packet, go to the AIA Web site at aia.org, or the ARCHITECTURAL RECORD Web site at archrecord.com. To order by telephone, call 888/242-4240 or 202/626-7467.

International Achievement Awards
Deadline for entries: July 1, 2003
Sponsored by the Industrial Fabrics Association International (IFAI), this competition offers architects an opportunity to gain recognition for projects that have creatively used fabric. The competition features 26 competition categories. Project entries include photos of outstanding specialty fabric projects and descriptions of their unique and important characteristics. To request a brochure and entry form, contact Christine Malmgren at 800/225-4324 or 651/222-2508, e-mail cmmalmgren@ifai.com, or visit www.ifai.com.

E-mail event information two months in advance to ingrid_whitehead@mcgraw-hill.com.

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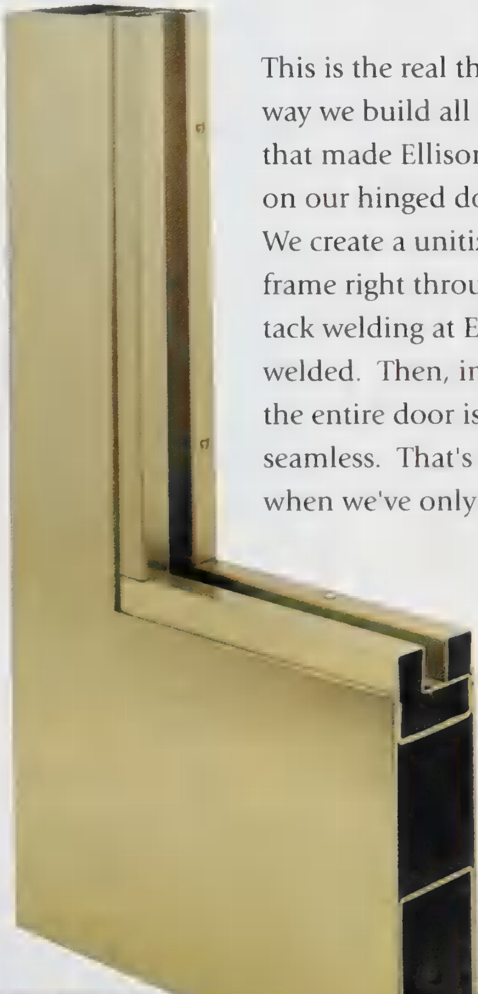

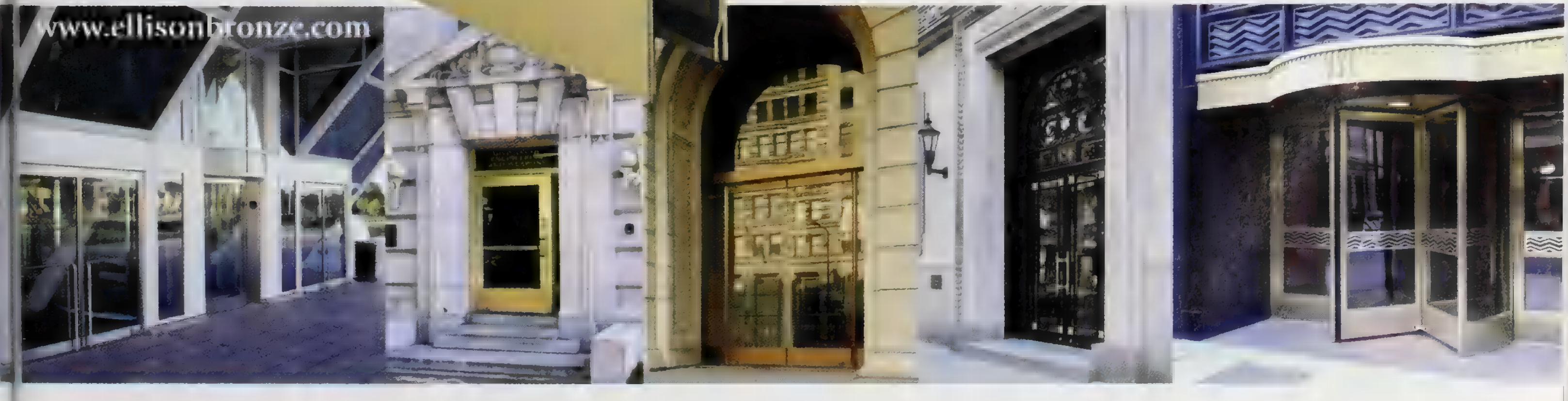

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For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

One of **archrecord2**'s recurring themes has been the nontraditional approach to an architectural career, and this month's section celebrates that. In **Design**, meet Freecell, a group of four architects who actively work to avoid being pinned down to one pursuit. And in **Work**, you can look into a fellowship that allows young architects to earn a stipend while designing low-income housing and other community projects. As always, **Live** and **Talk** are found on the Web.

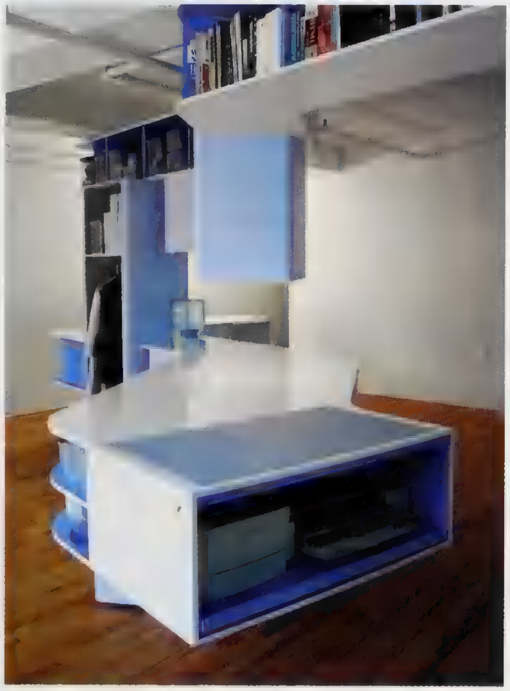
DESIGN

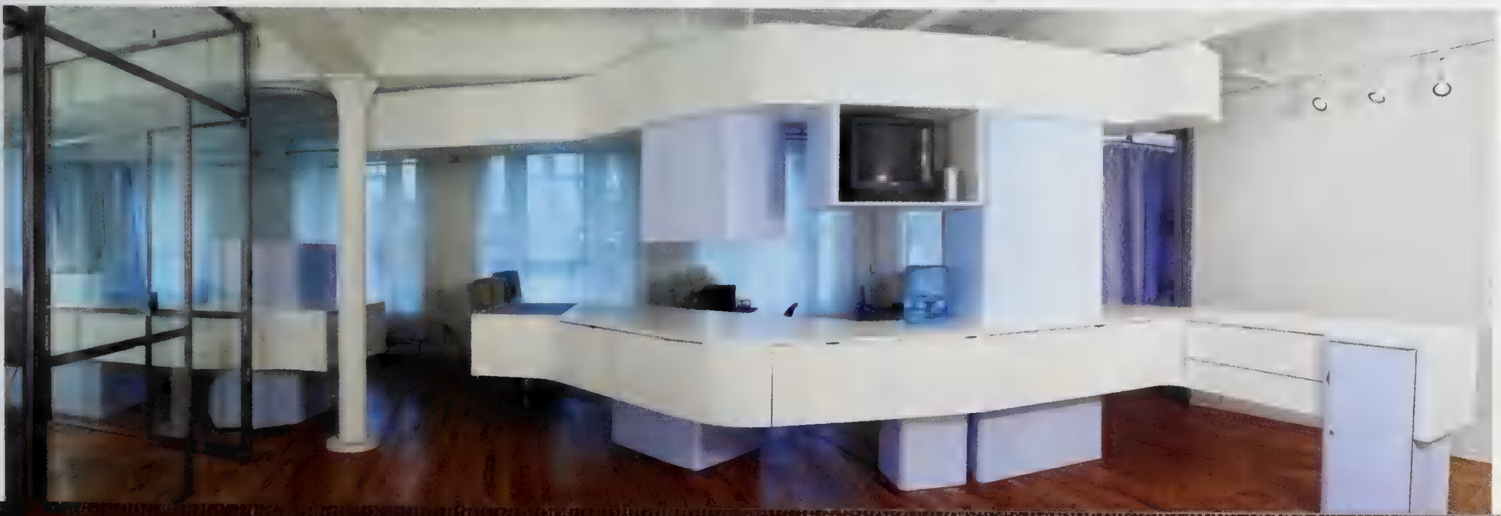
Freecell: Never the same firm twice

Lauren Crahan, one of the four members of the Brooklyn firm Freecell, doesn't like to assign a date to the group's founding. As she detailed the connections between various members, her partner Troy Ostrander (second from right) put marker to paper and diagrammed a sort of timeline with tributaries representing himself, Lauren, and the third founding partner, John Hartmann (left), swooping in to join the primary channel and then branching off again. The diagram takes in the various schools they attended (Hartmann alone went to three), and the various working arrangements they've found themselves in since then. The latest includes the addition of a fourth partner, Corey Yurkovich (right).

Freecell's present form defies easy description as much as its history does. The firm's product design was featured in RECORD last month, but all four members were trained as architects and continue to pursue projects like those pictured on these pages.

"It's not that we don't want to do architecture," Crahan says. "It's that we always want to put ourselves in a position that allows us to do what we want to do next. Maybe we'll do a traditional architectural project, and the next day we'll cut out a prototype for a piece of furniture or design a Web site. Our drive





Verb Media Offices, New York, 2003
A serpentine cabinet separates public and working areas in this office design. The public side presents a clean face, while the back serves as storage. Quilted curtains move to partition the space.

(continued from previous page) is to not feel trapped within a role that we've already defined for ourselves."

Ostrander adds: "We're trying to avoid the typical office: the day-to-day administration, the endless CAD, the 10-hour day."

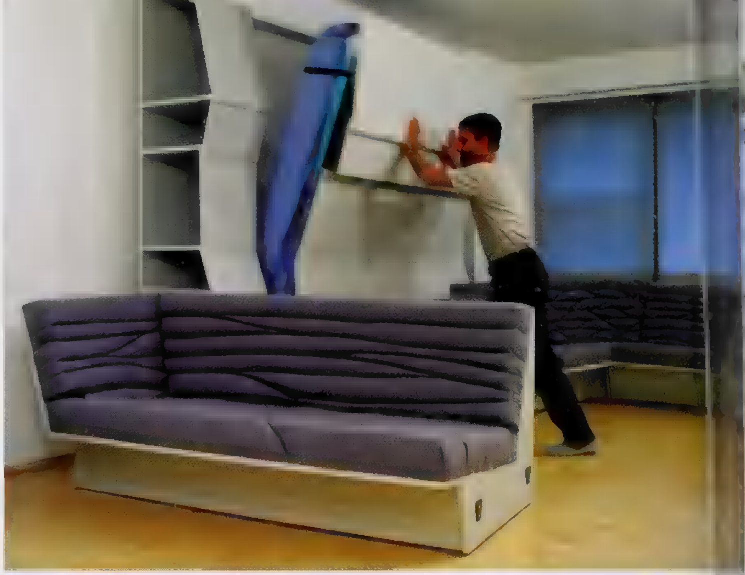
The four share a studio in a converted warehouse in Brooklyn's Dumbo neighborhood, near the waterfront. Their space reflects their do-it-yourself attitude: They are constantly tinkering with the office (the recent addition of the studio next door has doubled their work space and given rise to projects such as new bookshelves and a convenient pull-out tray for the coffee machine), and half of the office is given over to the workshop where they build most of their products, their gallery installations, and components of their architectural projects. The workshop has served variously as a room for painting, a greenhouse, and a wood shop.

All of this variety keeps the quartet from getting bored and constantly pushes their work in new directions. They are currently courting a client for what would be their first freestanding building, but aside from designing actual buildings, Freecell's destination as a design firm remains an enigma.

"Our working process is just to try to figure out what next step will lead to whatever the big picture is," Crahan says. "What is the big picture? I don't know."

Ostrander suggests one answer: "It's fame, isn't it?" *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 to see more of Freecell's work, including their past projects and their furniture and product designs.



Horodniceanu Residence, New York, 2003

To make the most of limited space, Freecell designed a Murphy bed that disappears behind a pivoting section of an attached couch. Curved shelving smooths out an angular entry hall, opening up to provide access to storage behind.

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Young architects in the community

Working for a private firm that produced high-end hotels, Jamie Blosser found herself "discouraged by the overall profit motive" and unfulfilled by her profession. So, when a friend mentioned an ad she'd seen for the Frederick P. Rose Architectural Fellowship, Blosser, 33, decided to investigate. Begun in 1999 by Enterprise Foundation, a housing and community development organization, the fellowship offers three-year partnerships between young architects and nonprofit organizations in order to encourage good design in low-income communities.

Blosser scrambled to complete the application. Three years later, she is working with the Ohkay Owingeh Housing Authority on tribal lands in San Juan Pueblo, New Mexico, constructing mixed-use housing that blends contemporary architecture with the traditional settlement planning of the Pueblo people.

"The fellowship has given me the tools I need to realize how the creative side of what I do can positively impact the civic side," says Blosser.

This sort of realization, according to fellowship director Stephen Goldsmith, is exactly what the program hopes to facilitate.

"Frederick Rose remembered young architects slaving away in back rooms of big firms, with no voice to express their values," Goldsmith says. "He wanted to bring in young architects who care about community development for underserved communities—and, in the process, create leaders."

Some would-be leaders, of course, require a bit of incentive—particularly those staggering under the weight of student loans. With this in mind, the fellowship, which issued a new call for applicants in January, offers a $40,000 annual stipend and a network of mentors, including an assigned IDP supervisor to help fellows who have yet to meet their licensure requirements. Enterprise also provides a list of potential partners. The program currently selects four fellows each year.

"We want to make it attractive for highly qualified graduates who may be nervous about an alternative approach to their apprenticeship years," says Enterprise Foundation C.E.O. F. Barton Harvey.

Community development necessitates a passion not everyone possesses. But for those who are fascinated by architecture's connection to broader ideas of city planning and policy, the fellowship offers an opportunity for immersion in community-based design projects years earlier than you would likely get such a chance at a firm. But be warned: It's easy to get hooked.

"I'm not interested in working in a traditional private practice anytime soon," Blosser says. "It's too exciting to be able to get the ball rolling and make decisions myself."

Claudia La Rocco

Go to architecturalrecord.com/archrecord2 for more on the fellowship, including stories from other participants and a link to the application form.

Illuminating Design

Project : San Francisco Embarcadero
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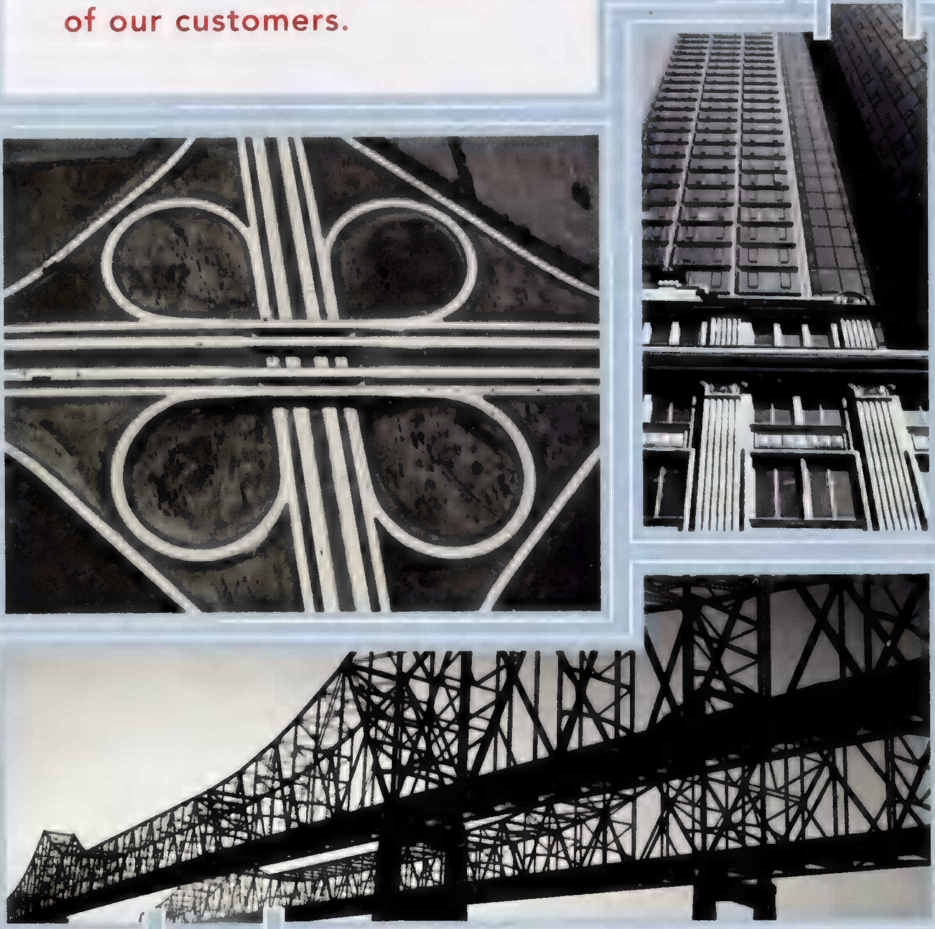

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Where tax and labor laws are concerned, handle your independent contractors with care

Practice Matters

By Alan Joch

Few professions are as vulnerable to the economy's peaks and valleys as architecture. The accompanying changes in work load present a constant challenge to anyone who is responsible for staffing a firm. Overfill your full-time workforce during boom times, and when work slows you may find yourself burdened with salaries, benefits, and eventually severance expenses, which gobble up profits. If you run too lean, you risk burning out your talent with too much overtime and deadline pressure when the good times return.

For a growing number of architectural firms, the balm for economic uncertainty is a hiring strategy that mixes a manageable core of full-time employees with an easily regulated stream of freelancers, more formally known as independent contractors (ICs). Their hired-gun status means they hang around only as long as you need them, which makes it easier for firms to achieve optimal staffing levels. "The architectural industry lends itself to this strategy, because it's either feast or famine," says David C. McFadden, C.E.O. of Consulting for Architects, a placement service for independent architects headquartered in New York City. "For the architects, working as an independent is attractive because it gives them exposure to a variety of projects."

Unfortunately, relying on ICs comes with its own bundle of risks. The IRS presents a labyrinth of rules, some open to interpretation, that define the legal difference between an IC and a full-time employee. Add to that the tax and workers' compensation laws of individual states, and knowing who to pay what can seem overwhelming for employers. Even architectural firms that believe they are diligently following the guidelines can find themselves defending against employee-misclassification claims. "At my previous firm, a disgruntled [contractor] reported to the Department of Labor and the IRS that he felt he was an employee," says one architect. The IRS agreed with the freelancer and "we paid huge fines." Companies found guilty of misclassifying full-time employees not only face paying back taxes and interest but are liable for penalties as high as 35 percent.

Still, there are those firms that find the temptation to hide behind the legal complexities too difficult to resist. "Most firms have an awareness of the IRS rules," says an industry veteran familiar with the hiring practices of some East Coast architects. "But many firms acknowledge tacitly that some people working in the office are not meeting the letter of the law." Managers in these companies may believe that the benefits of bending the rules outweigh the risks.

ICs save budgets

Given the risks, why bother with ICs? Because, when used properly, they can keep companies humming at less cost than a staff composed solely of full-timers. Along with the negotiated salary and benefits, such as vacation pay, health insurance, and other perks, architectural firms pay a number of expenses that full-time workers may not be even be aware of, including income, Social Security, and Medicare taxes. These ancillary employment expenses can add an additional 30 percent to a straight salary. Hire an IC, and a company pays only the agreed-upon rate for the professional services. The rest is the contractor's responsibility. Once the project is completed, the firm may choose to contract for additional services or not, without the emotion or expense of a formal firing.

For this reason, ICs have for years been a popular resource across all professions. The Bureau of Labor Statistics reports that there were 8.6 million people, or 6.4 percent of the total workforce, employed as ICs at the beginning of 2001, the last year for which there is data. This was roughly the same number as during the height of the last economic up cycle. Matthew Bidwell, a spokesman for the Institute for Work and Employment Research at MIT's Sloan School of Management, Cambridge, Massachusetts, notes that ICs represented a slightly lower percentage of the workforce in 2001 than in 1995, but says that in today's volatile economy, ICs may become more attractive to employers. Firms "would just as soon not make a permanent commitment" today, adds Ralph Steinglass, FAIA, principal of Teambuilders, a New York City organizational-development firm that focuses on architectural and engineering companies. "This works particularly well for smaller firms that are not sure about their work backlog."

The IRS crackdown

Some observers have another explanation besides the economy for why the use of ICs declined in the last decade: fear of the IRS. "The IRS was cracking down on companies that used independent contractors throughout the 1990s," says Lawrence Lorber, partner and labor employment lawyer in the Washington, D.C., office of Proskauer Rose. "Because with independent contractors there is no withholding of taxes, and that has serious tax implications for the IRS." McFadden, of Consulting for Architects, has an even more blunt view: "The IRS gave state, city, and federal agencies marching orders to go out and claim a lot of money."

Alan Joch is a business writer who lives in Francestown, N.H.

THE MICROSOFT CASE STRUCK FEAR IN THE HR DEPARTMENTS OF COMPANIES WHO CONSIDERED BENDING THE RULES.

The crackdown culminated when software giant Microsoft battled the government and a group of former ICs over its hiring practices. Microsoft relied on a cadre of freelance programmers and marketing professionals who received wages for their work but were left out of the company's benefits pool. Freelancers paid their own quarterly income taxes, and Microsoft paid no Social Security taxes for these workers. Freelancers even signed contracts that spelled out their independent status.

But in practice, these "freelancers" looked and acted like full-time Microsoft employees, with assigned offices and equipment on the Microsoft campus, and schedules that had them working side by side with the regulars. In 1989 the IRS went after Microsoft, which eventually paid taxes to the government and back pay for overtime work to some of the "misclassified" employees. The company then made some of these workers permanent employees. Others could continue only if they joined an employment agency that placed temps and would pay the required taxes.

Later, part of the original band of freelancers sued the company for retroactive benefits, including participation in its retirement and stock plans. Microsoft was eventually forced to compensate the workers. If the government's goal in going after Microsoft was to strike fear in the HR departments of smaller companies who considered bending the rules, it worked. Lorber says the Vizcaino ruling hovers over companies across all industries that hire ICs.

The Miller Hull Partnership, Seattle, is one design firm that finds freelancers useful to supplement its permanent staff of 46 people. "We now have one guy who's helping build a model who has been here a couple of months," says Stacy Rowland, accounts manager. "We also have a former employee who left to start a firm, and we hired that firm as a consultant." She says the use of ICs is constantly in flux at Miller Hull. "We can go for a year without having one, then if a big project on a fast schedule comes in, we may hire several."

But in good times or bad, Rowland's company doesn't hire ICs cavalierly. The laws surrounding independent contractors "can be pretty tight," she says. "The best arrangement is to contract with a guy who owns his own firm and works from that address. He submits invoices and gets a 1099 [a year-end tax statement for independents], doesn't fill out a time sheet, and works fewer than 30 hours a week."

That's an attractive profile because it addresses the key criteria the IRS uses to differentiate ICs from full-timers. Two basic types of nonpermanent employees pertain to the architecture industry. First, there are *independent contractors,* professionals who provide a service based on information the client presents as to what work will be performed. The service provider determines how the work gets done (the method) and provides the means (the tools and resources) for completing the task. These workers are responsible for paying their own quarterly estimated income taxes and typically receive 1099-MISC income summaries, rather than W-2 wage forms, at the end of the year, to file with their annual tax returns. *Common-law employees* are workers who may or may not be labeled

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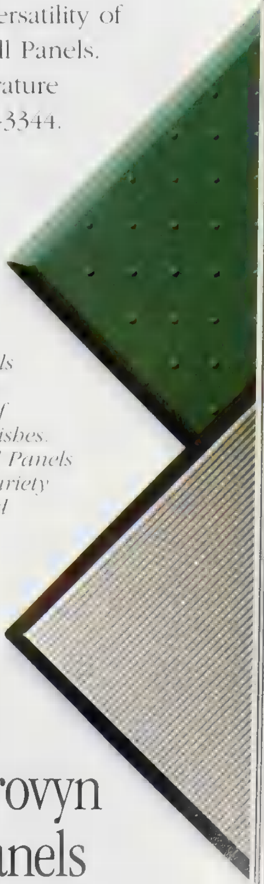

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as full-time employees, but the methods and means for performing their services are governed by the client. This includes directives on when and where to do the work, the tools and equipment the worker will use, who will provide supplies and ancillary services, and in what sequence work leading up to the final product must flow. The government also considers whether the workers perform their service on site and in concert with regular employees, as in the Microsoft case. Employers of these types of workers are responsible for withholding and paying income, Social Security, and Medicare taxes.

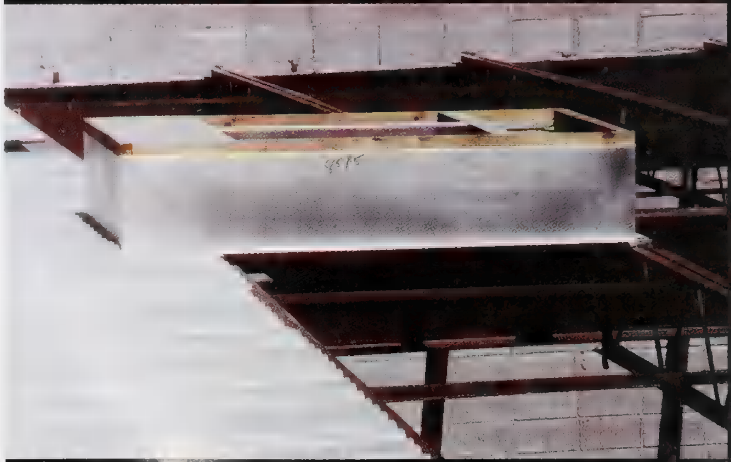
McFadden believes employers sometimes get into tax trouble because some of these rules are open-ended. "The standards may be interpreted in different ways at the state, city, and federal level," he says.

To clarify employment relationships, Rowland routinely requires ICs to sign a contract that spells out their independent status, including the fact that her company won't withhold or pay income taxes. Some companies require ICs to provide a trove of additional paperwork. This documentation includes business cards, invoice forms, copies of professional licenses, and 1099-MISC forms from previous years, all of which can bolster an employer's case if it is charged with misclassifying employees. However, no amount of contracts and paperwork is enough in itself to protect a company if its freelancers don't meet the methods and means criteria. "With independent contractors, the rule of thumb is whether how they produce [the final work] is up to them, as long as the result is consistent with the employer's standards," he says. "If part of the deal is that they have to work between 9 and 5 and the employer is providing the computers to do the work, then I'd say the independent status may simply be a sham."

He adds that employers can lawfully create a category of temporary full-time employees who are hired for a particular length of time but for whom the employer withholds taxes. The advantage: Since there's no expectation of long-term employment, these workers may be painlessly let go if business declines, but their tax status remains clear while they're on the job. "We have had a policy for years here where even temps working freelance are put through the payroll system," says Carl J. Nolan, comptroller for Fox & Fowle Architects, New York City. "They may not have insurance and benefits, but we pay payroll taxes."

Lorber says another increasingly popular option is to hire professionals through a temp agency rather than entering into direct agreements with the employee. The employer chooses services from the agency's stable of providers, who in turn are direct employees of the agency. In return for a service fee the employer pays the agency, the latter takes responsibility for withholding and paying federal and local taxes and may offer additional employment benefits, such as health insurance.

As work slacks off in some markets, firms are becoming more cost-conscious. Project managers who are fortunate enough to need help in a hurry need to involve HR, accounting, and legal advisers when making hires so that ICs are evaluated for more than just their design talents. Karen M. Johnston, AIA, principal of J.M. Califf AIA & Partners, a 4-person design firm in Irvine, California, gives this sage advice: "We don't contract with consultants unless they actually have their own businesses, can provide proof of a current city business license, provide contract services for other clients, and they do not physically work in our office. Anything less is too risky." ■



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Do recent collaborations of design architects for the WTC site show that Gropius had it right?

Commentary

By Suzanne Stephens

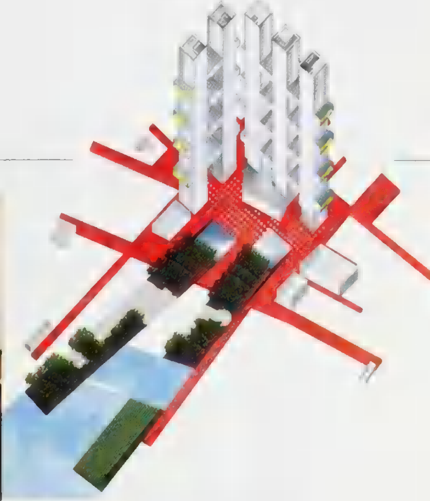
Back in the Bauhaus days, Walter Gropius argued that the "team" of craftsmen, artists, and architects would take over from the lone, creative genius. Yet, by the mid-20th century, Gropius's model had been transmogrified into the corporate architectural firm that offered a broad package of services, but design inventiveness was not part of the picture. When independent architects got together for a special project (United Nations, Lincoln Center), the results often resembled the proverbial camel created by a committee. Meanwhile, the image of the individual architect as a creative genius just wouldn't go away. If anything, it was fortified by the media's pumped-up cult of celebrity in the latter part of the century.

So the circumstance whereby four of the seven teams short-listed to compete in the planning of the World Trade Center (WTC) site each included several different design offices was compelling. To be sure, the competition, sponsored by the Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey [RECORD, February 2003, page 31] involved engineers and/or landscape architects as consultants, even for the individual design offices, such as Studio Daniel Libeskind, Foster and Partners, and Peterson/Littenberg Architecture and Urban Design. But the mere thought of such design honchos as Richard Meier, FAIA, Peter Eisenman, FAIA, Charles Gwathmey, FAIA, and Steven Holl, AIA—each with a definite imprimatur—coming up with a joint design is striking. Does this portend something for the future? And does it promise the creation of great architecture?

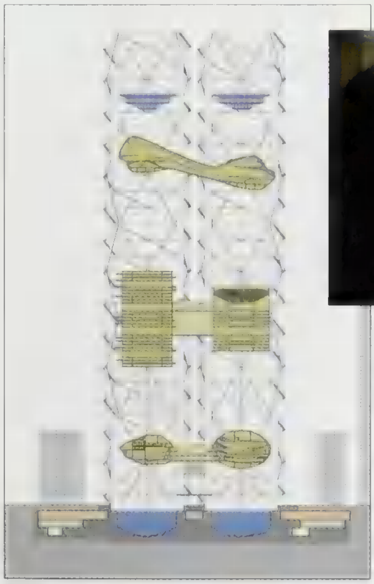
In any event, as RECORD goes to press, the THINK team and Studio Daniel Libeskind have been selected as the two finalists (page 29). Whether or not the winner is a team or an individual probably won't be that telling in this situation: The contest is too peculiar, with too many variables, for its outcome to indicate much about the success of one over the other modus operandi. Nevertheless, the actual experiences of the team members and their thoughts on the benefits or disadvantages of collaborations offer some insights for the future.

The incentives for teaming up were obvious with the WTC site: With a complicated selection process, a program that is arguably hypothetical and ambiguous, plus the knowledge that the firms stood to lose money because of the hours required and a remuneration of only $40,000, it made sense to spread the risk. Also, the time frame was severely truncated. After a briefing in early October, the design teams had two weeks until the first review, then another two weeks until a "mid-term" review, and about two weeks before a final review, after which the schemes were readied for the presentation on December 18, 2002.

For this reason, logistics were critical, particularly since three of the four teams had architects flying in from Tokyo, London, Rotterdam, Amsterdam, and even Los Angeles. Although e-mail made international collaboration possible, face-to-face contact was imperative. Generally, one office in New York served as home base for constant meetings and work. The international firms had one or two people take up residence in the New York office, while the principals would appear every two weeks for intense charrettes.



The Meier, Eisenman, Gwathmey, and Holl team discusses its WTC-site scheme.



Reviewing the World Cultural Center: THINK's Shigeru Ban, Frederic Schwartz, Ken Smith, and Rafael Viñoly.

Four gorillas on a grid

The New York Times' bringing together of well-known architects to work on a special issue of the Sunday magazine (September 8, 2002) devoted to the design of Lower Manhattan proved to be a dry run for collaborations for the LMDC competition. Richard Meier found that he, Eisenman, Gwathmey, and Holl could really communicate with each other (the first three also had known each other for about four decades). Even though Holl, the relative newcomer, describes his encounter with Eisenman at the first meeting as "really heated," he claims the process worked well.

RICHARD MEIER AND PARTNERS (TOP); © ROMAN VIÑOLY (BOTTOM)

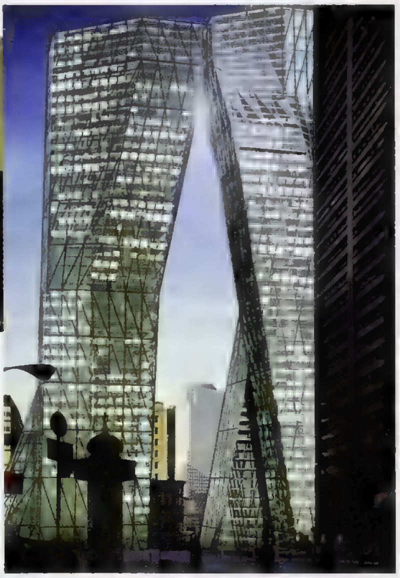
Skidmore, Owings & Merrill's team, led by Roger Duffy, included architects, artists and urban planners.

Gwathmey says both Holl and Eisenman showed they "could move past particular design predispositions to a healthy dialogue. Holl would come back and push the scheme, and improve it. Peter also took on the project as an abstract exercise. He was a great critic."

For his part, Eisenman felt that "working with four gorillas involved negotiating and making trade-offs. Ultimately, it didn't look like any of our projects." Holl says that was the point—not to create a "signature" of any one architect, which he thought would be empty.

The group also decided that this scheme should be a piece of urbanism more than architecture, and designed the scheme to feature a large Memorial Plaza from which fingers of space extended to the water. The building forms resulted from lifting the grid up off the ground. The domination of the grid proved to be a signature piece, which is easy to understand: These guys grew up on grids. Even if it is not rotated and cranked here, the grid is still their lingua franca.

United Architects' scheme was proposed by five architectural firms.



In discussing how the four developed their scheme, Meier says, "I would attribute the building form to Peter and Steven, the transportation system was totally worked out by Charlie, and I came up with the fingers of open space. But we all did this. The conversations were terrific." Gwathmey argues, "The whole process energized me and refocused me. I would do it again." As for Eisenman? "It's a cleansing experience that's good once in a while—but, like a sauna, not all the time."

Three's a crowd

On the day of the presentation, it seemed like the THINK team must have been the most fractious group—after all, they were presenting three schemes, as if they couldn't agree on which one was best. Nevertheless, principals Frederic Schwartz, AIA, Rafael Viñoly, FAIA, Shigeru Ban, and landscape architect Ken Smith stick by their explanation that each proposal reflected different levels of public financial investment, from the least expensive "Sky Park" to the "Great Room" and, ultimately, the "World Cultural Center." And now they have the last laugh, because the third scheme, with its two open latticework towers, is the one that caught the LMDC's and the Port Authority's fancy. The first two schemes were quickly sloughed off.

The collaboration of these architects was prompted by *The New York Times*' effort, where Schwartz and Viñoly designed separate projects. Schwartz enlisted Shigeru Ban, who had worked on Westway right after he got out of Cooper Union. And Ban also had his own ad hoc partner in New York, Dean Maltz, join the team. Schwartz brought in Ken Smith, whom he knew from another competition collaboration.

William Morrish, an urban planner on the THINK team, argued for developing several schemes as a way to explore public space as a central theme. The LMDC encouraged THINK to proceed with three, even though it caused a kerfuffle among other teams discouraged from doing so. According to Ken Smith, he and Schwartz worked the most on the "Sky Park" scheme, while Ban came up with the "Great Room" proposal and a concept sketch for the "World Cultural Center," which Viñoly then developed. Ban insists, "Everyone presented his own design or designs in the beginning. But the three schemes did not result from three architects' different views."

The troika of schemes almost caused THINK to sink on December 18. The audience, made up mostly of the media, was totally confused: Were these three parts of one scheme or three different schemes? Viñoly contends he didn't have sufficient time to explain the difference at the presentation. But the *Times* continues to get it wrong: Herbert Muschamp's February 6 essay on the two finalists illustrated THINK's chosen scheme, the "World Cultural Center," with a rendering of the Great Hall from the now-jettisoned second submission.

THINK says it had even more proposals. Schwartz (who Ban describes as acting in the role of the "mother to the two kids—Viñoly and me") felt that ultimately the THINK team pulled off the ambitious effort because, he says, "We shared the same work ethic, even if we don't have the same ideology." And they shared a willingness to spend money. Viñoly estimates the cost was at least $500,000, nonreimbursable.

New kids on the block

The most overwhelmingly unusual proposal was the Brobdingnagian megastructure produced by United Architects, whose members came from London, Amsterdam, Los Angeles, and New York. A clear testament to the success of the collaborative process is that the team is actually forming a permanent New York office, while keeping separate home offices.

Greg Lynn, of Greg Lynn FORM, explains that all knew each other well. Indeed, in 2000, Lynn in Los Angeles, UN Studio (lead by Ben van Berkel and Caroline Bos) in Amsterdam, plus Reiser+Umemoto in New York had teamed up for the Downsview Park competition in Toronto. Although the WTC-site team of Foreign Office, in London (Alejandro Zaera Polo and Farshid Moussavi), couldn't do it then, they were available this time around.

Meanwhile, Kevin Kennon, AIA, who used to be with Kohn Pedersen Fox, had worked with Jesse Reiser, AIA, and Nanako Umemoto on a scheme for New York's Eyebeam arts center competition in 2001, and contacted them.

United Architects also decided against "signature" buildings—but certainly came up with a thundering, signature statement. To do so, the group divided up areas in the first four weeks, with particular principals focusing on components such as the surface plaza (Umemoto); the subgrade level (van Berkel and Foreign Office); the towers (Foreign Office and Kevin Kennon); the void

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space (Greg Lynn and van Berkel); and the memorial space (Lynn, Reiser, and Peter Frankfurt, from the graphic design firm Imaginary Forces). In this effort, Caroline Bos and Kennon often became the "glue" for the rest. But, says Reiser, "No one had to establish ground rules, and there were no different agendas." Lynn adds, "The compressed time frame meant any pettiness got washed out."

At one point the group wondered if it should come up with a plan that would conform more to what the LMDC and the development community might want, with freestanding towers placed east of Greenwich Street. The architects took a vote, "which was close," reports Lynn. And that was that.

Gropius beyond the grave

Of all the teams, the SOM group proved in the end to be the most perplexing in terms of the design and the final outcome. SOM's presence both enabled the team formation and posed the problems, the first being that SOM had been hired by the developer, Larry Silverstein, who has the lease to the original World Trade Center. To be part of the competition, the firm had to suspend work for Silverstein during this phase. Meanwhile, David Childs, FAIA, and Marilyn Taylor, FAIA, the two established heads of SOM's New York office, felt they shouldn't participate. So Roger Duffy, AIA, an up-and-coming talent at SOM, put together the cohort. Duffy, who had worked with artists before, describes his role as the "curator," and asked the DIA Center for the Arts for names of artists. "Artists bring an intangible aspect," he says. "They observe things in a way that architects do not." So he contacted Iñigo Manglano-Ovalle, Rita McBride, Elyn Zimmerman (who knew David Childs), and Jessica Stockholder.

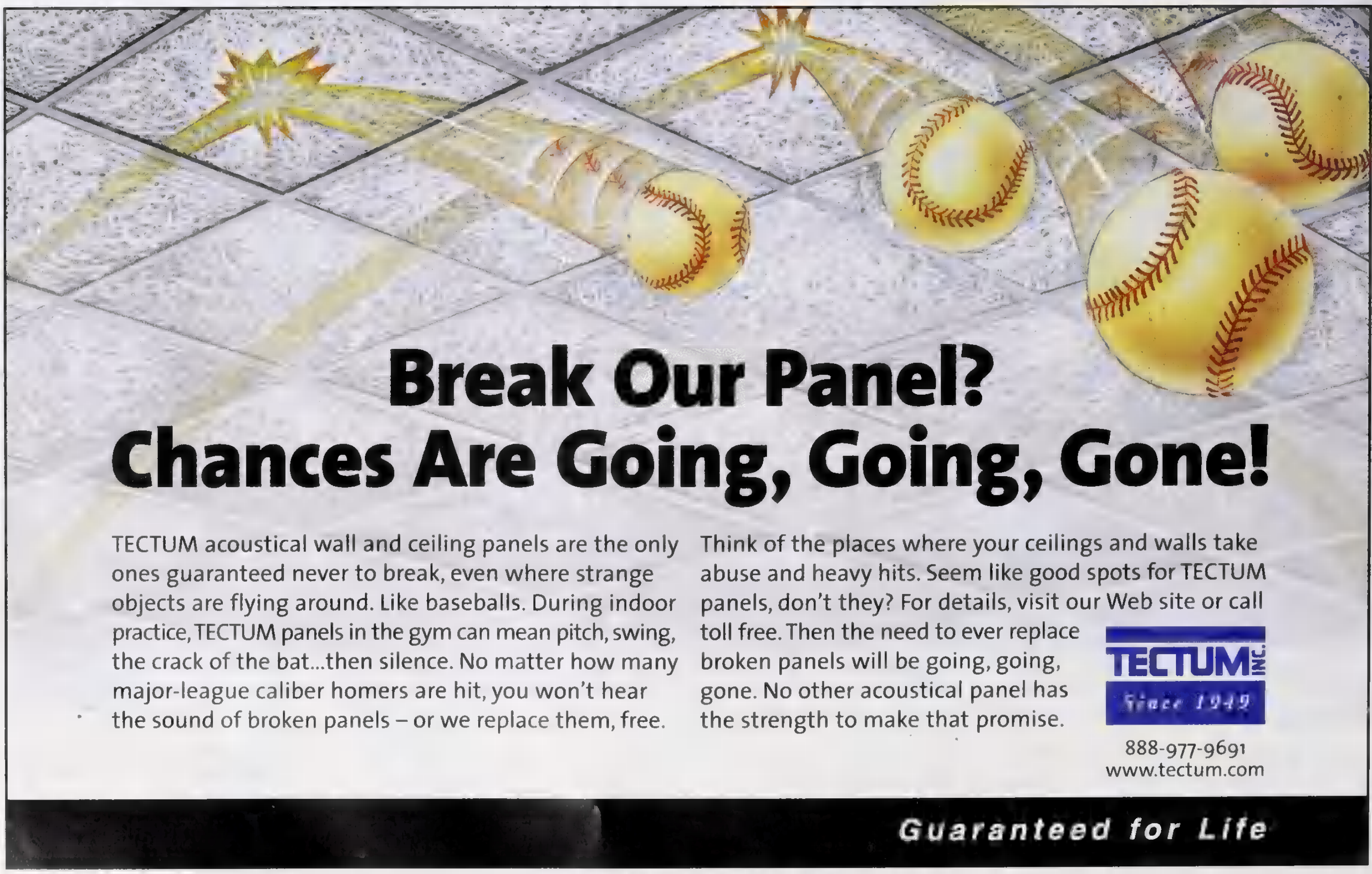
AN OFFICIAL AT LMDC TOLD THE *NEW YORK POST* THAT THE SOM TEAM FOUGHT LIKE "CATS IN A SACK."

The architects involved were more familiar to SOM, for it has worked with architect Stan Allen, AIA, and landscape architect James Corner, of Field Operations, on a Fresh Kills, Staten Island, land-use plan, and with Michael Maltzan, AIA, of Los Angeles, during his previous association with Frank Gehry, FAIA. The others, such as SANAA (whose principals are Kazuyo Sejima and Ryue Nishizawa), in Tokyo, and Willem Neutelings and Michael Riedijk, of Rotterdam, were known to Duffy, but not through working relationships.

It took time for such a large group of architects and artists, many of whom were strangers to each other, to become familiar with the others' ideas and the issues. "It was chaotic, not smooth," Zimmerman notes. "SOM kept it focused. But it was brave and crazy to get so many involved."

An official at the LMDC told the *New York Post* that the team fough like "cats in a sack." Duffy shrugs it off, saying, "A few too many architects hadn't worked together." Manglano-Ovalle has a more philosophical take: "At the beginning, when you are conceptualizing a direction and negotiating terms, there is an equal playing field. But when you start giving form to the idea, territories of expertise appear, and the common language erupts into different ones. They collide, but, conversely, this collision promotes a more complex understanding of what's at stake."

Complex understanding or not, the number of team members did diminish by the end when Neutelings Riedijk quit the group,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objecting to the final arrangement of urban forms, a series of 940-foot-high bent towers densely covering the site. Another participant felt, “The ideas were deeply watered down between the second and the final review—inexplicably so.”

Even with the diluted final version, the scheme was a loner. Duffy argues the buildings, erected on nine parcels, were bent so that light and air could penetrate between them. Sky gardens in the towers became the primary form of public space, to “challenge concepts of private and public,” says Duffy.

The final version did look strangely undeveloped and lacked appeal for the press and the public. SOM decided it needed to pick up the ball with Silverstein, and so withdrew right after Christmas (advising the other team members by e-mail). SOM says it expected the LMDC would allow the team to continue through the next phase (cost and traffic analyses), but the LMDC said if SOM was out, the whole team was out. “Some of the meetings with the LMDC and the Port Authority had been contentious,” says Allen. “They expected us to keep the footprints, but we felt these boundaries were artificial.”

Clearly the footprints are part of the competition’s realpolitik. Both finalists are keeping commercial development on the east part of the site, away from the footprints, with a land-use plan strikingly in accord with Beyer Blinder Belle’s. Some could say that as radical as SOM seemed, it was proposing a concept that too snuggly fit in with Larry Silverstein’s original desire to have 60-story office towers totaling 11 million square feet on the site.

Another time, another place? Certain lessons can be drawn for architects who want to collaborate. It helps if the architects know each other well from the outset, and better yet if they have worked together. Then they have to put aside individual differences, and allow debate to occur freely. And it is important, Holl remarks, “to articulate right away what you are trying to achieve.”

Many collaborators were not happy with the LMDC’s changing goals and agendas. But Ken Smith of THINK points out, “While this is a messy process, you have to commend LMDC for taking the risks and going into uncharted territory. They didn’t know where we or they were going with it.”

And they aren’t the only ones. But one question we might consider is whether the collaborations produced better, or more interesting, architecture than those by individual offices. Theoretically, the sum should be greater than the parts.

These schemes were definitely not camels by a committee. However, the end results were very strong polemical statements, rather than something that might be conceivably built in the next fe decades. With the collaborations, the design architects seemed like chefs involved in a master bake-off. In several cases, the final dish had so many ingredients, the public and the media couldn’t digest it, or in the case of the Meier team, the design was of such an unremitting consistency that it quickly led to satiety.

The individual offices had the advantage of combining and expanding certain tried-and-true ideas, or—in the case of THINK—pouring its energies into three dishes, and throwing two away. However, the intensity and power of the schemes should not be ignored. And certain parts and pieces can be salvaged and developed further in the future. As Morrish points out, “Collaborations provide the energy and ideas in a tough situation like this.” Nevertheless, there will always be the dilemma of too many chefs stirring the pot—even when they work well together. ■

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Can architects and planners use security concerns to create more humane cities?

Critique

By Michael Sorkin

A recent ad for a Homeland Security Summit and Exposition bore the headline, "Grab Center Stage In a $138 Billion Market." Clearly, paranoia is a growth industry and the proliferation of conferences and meetings to discuss its implications is staggering. Since September 11, the nation has been consumed with its "war on terror" and the lens of fear diffracts more and more of the meaning of everyday life. From bomb detectors at the airport to the rise in ethnic profiling to the visa difficulties of the students we admit from abroad to the Pentagon's sinister data-mining project run by Admiral John Poindexter (of Iran-Contra fame) to the new tics in our private behaviors, the culture is suffused with incitements to anxiety, as the media fixates on the imminence of terror.

My own private internalization of this fear strikes me from time to time on my walk home from my studio, which takes me past a large federal building that houses, among other offices, the passport agency. As I approach this block, I often find myself thinking about car bombs. After particularly anxious days at work, I sometimes imagine I have spotted the lethal vehicle (generally some nondescript minivan) set to explode. I have walked blocks out of my way to circumnavigate the building and the impending fatal blast.

We measure the environment in the light of our perception of its perils. Whether skirting dark streets at night, mapping and avoiding "dangerous" neighborhoods, or staying out of tall buildings, the human geography of the city entails assessments of convenience, pleasure, and risks. Our problem nowadays is that we are creating an urbanism predicated primarily on risk avoidance, one likely, in its more extreme versions, to have a terrible effect on fundamental ideas of the good city. To the degree that we acquiesce, we become complicit in a cycle of exacerbated paranoia, creating a bunker mentality.

Contributing editor Michael Sorkin is the director of the urban planning program at City College of New York.

Behavioral bunkers

There are both material and immaterial bunkers. The material variety—already abundant—include the proliferation of biometric checkpoints, credentials checks, hardened construction, defensive bollards, ditches around "high-value" targets, and so on. The immaterial fortifications are more internal and revolve around modifications to our own behavior: anxiety about setting out, willingness to permit prying into our private information, suspicion of people who somehow look "wrong," or demands for accelerated police action. Internalizing the means of our own repression, we risk allowing fanatics to turn us into totalitarians.

In his book *Discipline and Punish,* Michel Foucault describes the response of a town in the Middle Ages to an outbreak of the plague. Lacking modern medical knowledge, the town—on a signal from the authorities—adopted a state of hyperorderliness, making personal movements geometrical and activities clockwork. This superposition of an apparently rational style of urban behavior was meant as an antidote to the evil and irrationality of the disease. Needless to say, it was not effective, although—in a typically *post hoc propter hoc* argument—the eventual waning of the plague could be attributed to the only course of action actually taken.

And this will be our delusion, too, if we acquiesce in the reimagination of our cities as battlegrounds, rushing to superimpose military order in a place that requires very different styles of discipline, hierarchy, and choice. We have all suffered the new inconveniences of the main focus of current security efforts: the air transport corridor. The time in line waiting to pass through detectors, the force of interrogators asking us whether someone has given us something to carry on the plane, the large numbers of armed personnel, the endless thresholds at which we are scanned, and our progress through space mapped step-by-step have all become part of the background of our lives. Making this process convenient by making it invisible is not one in which we should participate uncritically. We may want to glide from the concourse to the gate, but I, for one, want to know when I am being electronically patted down and to whom this information is being conveyed.

Given the genuine risks that we do face, however, the question becomes whether there is any meeting ground between the need for precautions and the ongoing project

Coast Guard officers keep watch over Lower Manhattan, where tightened security has changed transportation and pedestrian patterns.

of urban amelioration—the construction of cities that are humane, democratic, and sustainable. I think there are several potential points of convergence between these concerns, places where energy might be focused to make our cities both more comfortably secure and more comfortably free, a kind of "peace dividend" from a number of the measures we are likely to take based strictly on questions of security.

MANAGING SYSTEMS OF MOVEMENT IS THE CENTRAL OPPORTUNITY FOR SYNERGY BETWEEN SECURITY AND URBANITY.

We can begin by extracting questions of safety and security from a narrow focus on terror. So many more of us die falling down stairs or in automobile accidents than in wars or terror attacks that a little perspective is necessary, a realistic sense of proportion about the sites and organization of investment. The risk of being struck down crossing the street by an S.U.V. is far higher than the worst bin Laden can do. I don't mean to be glib, but it is important to understand that the fear-mongering of the moment is based on a set of fundamentally political agendas. How then to depoliticize the idea of safety, or rather, how to democratize it?

To begin with the most obvious, the project of making cities and buildings safer must encompass needed improvements for security from other risks. Clearly, reinforcing buildings against seismic hazards also brings greater safety from other sorts of externally induced structural traumas. Perhaps even more important is the dramatic improvement of fire safety. Many of the lives lost in the World Trade Center disaster might have been saved with better fire-abatement systems, with increased means of egress, with better internal communication, with careful attention to the presence of toxic and flammable materials. These are steps that need to be taken on an urgent basis, especially in tall buildings.

If September 11 can serve as a goad for us to address the threats mounted to buildings, this is to the good. However, even here we hazard a kind of parochialization of risk. Building safety must also encompass the effects of architecture on climate, the health-related effects of "sick building syndrome," the damage to resources in remote locations, the flat-out toxicity of many of the materials with which we build, the dangers of the building process, and the insecurities engendered by the massive consumption of energy by buildings (itself one of the reasons for the current rush to war). A national policy based on securing the means for continuing the cycle of hyperconsumption has enormous and unfaced planetary and political consequences. Building security goes way beyond metal detectors and security guards.

Rethinking the city after 9/11

One of the striking scenes in New York City following September 11 was a dramatic rearrangement in the movement of traffic, when access via bridges and tunnels was limited. Emergency vehicles were able to flow without impediment. Streets were preternaturally quiet. Pedestrians were predominant. Carpooling was enforced.

In the process of rethinking the city after 9/11, the management of systems of movement is perhaps the central opportunity for synergy between security and urbanity. In New York, we have the opportunity for a dramatic pedestrianization downtown, using Ground Zero as a point of dissemination for the net-

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work. This local greening might be accompanied by a large-scale reduction in private vehicles in the city as a whole and the replacement of no-longer-required road space with parks, bikeways, and other public amenities. The moment is also ripe for a more rational system of goods distribution and delivery. Both security and urbanity would benefit from more rigorous management of city traffic: greater efficiency in delivering milk might have an ancillary benefit in greater inefficiency in delivering bombs.

A general increase in architectural and urban "inefficiency" could, indeed, have many positive effects. A multiplication of routes and a mix of scales would humanize cities that are too straightforward and homogeneous. Structural overdesign and redundancy could increase both safety and complexity. An architecture more integrated with the earth around it would enhance thermal performance, environmental continuity, and variety of use. The sort of bottom-line inefficiency represented by European-style regulations that limit the dimensions of office floor plates to guarantee workers access to light and air would create buildings that are psychically and physically both safer and friendlier.

As Jane Jacobs has observed, strong neighborhoods are safe neighborhoods. Her theory suggested local spatial supervision based not on centralized means of surveillance but on the extension of the idea of neighborliness. Although anonymity is a prized value in city life, it is one among many, and there are styles of violation of our privacy that are more and less civic. The grandmother leaning out of the window keeping an eye on the street is a radically different phenomenon than those M-16-toting guardsmen manning checkpoints downtown after September 11. It is not liberal sentimentality to suggest that building strong neighborhoods, neighborhoods with complex nets of relationship and interdependency, is an intrinsically superior style of security than CCTV on every corner. Our personal participation in the security of our cities and neighborhoods should grow from a sense of decorum, not fear.

The good urban life

By extension, we are now presented with an opportunity to rethink the nature of business and commercial concentrations within individual cites. The same technologies that allow corporate headquarters and call centers to grow on green-field sites far from the pleasures and conveniences of town can also allow us to adopt a policy of local decentralization based not simply on security from terror but on the convenience of building sustainable communities. Places in which living, working, education, culture, recreation—all the components of the good urban life—can be planned comprehensively: metropolitanization rather than globalization. In terms of the real economic development of New York City, for example, it would seem far more productive to apply the massive capital that is about to be squandered on unneeded offices downtown to the reconstruction of the Bronx Hub or 125th Street.

The key to our security is neither the construction of new fortifications nor a willingness to progressively surrender our shrinking rights of privacy to the tender mercies of the national security state. Our best defense against terror lies in the strength of our democratic institutions and of our human character: Armament is not a substitute for a culture of compassion and generosity. The horrible events of 9/11 are not a call to arms, but to justice, to increase the peace. Good cities, the manufactories of our civilization, are a bulwark. ■

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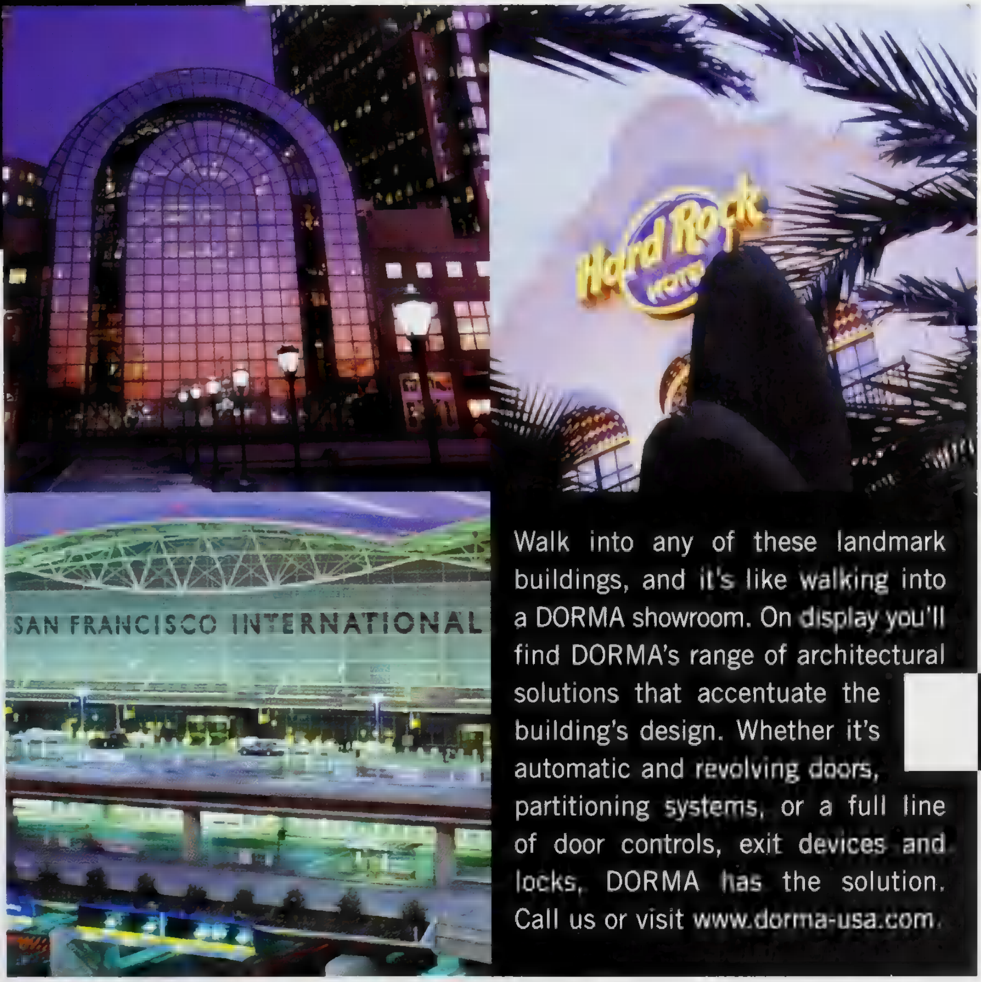

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Tackling tough questions: From the divided city of Jerusalem to the amorphous realm of theory

Books

The Next Jerusalem: Sharing the Divided City, *edited by Michael Sorkin. New York: Monacelli, 2002, 432 pages, $50 (paper).*

In July 1999, at an idyllic estate in Bellagio, Italy, architect and critic Michael Sorkin orchestrated a conference on the future of Jerusalem. He invited Israelis and Palestinians and a few people from other places. The 25 participants—architects, planners, economists, political scientists, and academics—offered an array of proposals for the physical future of a city that has been built, destroyed, rebuilt, conquered, converted, coveted, and divided for thousands of years.

Few places in the world raise such seemingly intractable issues of sovereignty, religious belief, and social organization as does Jerusalem. Despite all their differences, the participants at the 1999 conference exhibited a surprising "convergence of views," says Sorkin, on issues ranging from the legitimacy of Palestinian nationhood and the need for an open city to the consolidation of infrastructure in the Jerusalem metropolitan area. *The Next Jerusalem* is the fruit of that conference, a sharply designed book that brings together 25 essays illustrated with a mix of hip images, impressionistic sketches, documentary photographs, and colorful charts and maps.

As Sorkin explains in his preface, "It may have been my own mistaken faith in the religion of architecture, but I felt that there were issues that *could* be discussed outside the territory of politics. No matter the ultimate disposition of sovereignty, it seemed to me that questions of ecology, preservation, neighborhood development, open space, and so on would need many of the same answers."

The book's essays present a diverse set of concerns and ideas. For example, Ghiora Aharoni, an architect now working in New York City, proposes displacing key monuments such as the Dome of the Rock and the Western Wall to places outside of Jerusalem and accomplishes the task in photo montages that force readers to consider the emotional attachments of place and object. Romi Khosla, an Indian architect currently working with the Palestine Authority, envisions a high-tech train running from Gaza to Haifa and connecting communities as different as Hebron, Jerusalem, and Ramallah. Several of the book's contributors offer dramatically different readings of Jerusalem—from Dag Tvilde and Ali Ziadah's use of demographic maps to Amir Sumaka'i Fink's view of "queer" Jerusalem and its gay landmarks. Other contributors include Thom Mayne (who makes some wry connections between theme parks and the Old City), Lebbeus Woods (who contributes some remarkable drawings entitled *Meditations on a New Jerusalem*), and Moshe Safdie (who has been building and designing neighborhoods in the city over the past three decades).

Reading this book now—when negotiations and trust between Israelis and Palestinians have broken down—one can't help but wonder if it is a remnant of a brief moment of hope in the history of Jerusalem. But precisely because the outlook seems so bleak right now, I think this book is more important than ever. As I write, political violence is an everyday event and Israel is busy constructing a giant fence to separate itself from its Palestinian neighbors. *The Next Jerusalem* points in a very different direction and should be required reading for everyone concerned about the fate of this unique and mesmerizing place. *Clifford A. Pearson*

Landscrapers: Building with the Land, *by Aaron Betsky. New York: Thames & Hudson, 2002, 192 pages, $50.*

In terms of coffee-table architecture books, *Landscrapers: Building with the Land* is eye-candy with a concept. Aaron Betsky, the director of the Netherlands Institute for Architecture and the former architectural curator for the San Francisco Museum of Modern Art, presents a collection of high-gloss projects with an abundant, even excessive, rationale.

Betsky begins with the idea that architects use land in a multitude of ways, manipulating materials, construction, structure, and function to form and inform their designs. "Landscrapers" (a cute linguistic play co-opted from architect Antoine Predock) are the result of this practice. Not landscape architecture, landscrapers address the concept of land.

With this conceptual frame established, Betsky continuously redefines the term *land* in the book's five essays and 43 projects. This strategy addresses the differences among projects that range in program, site, and materials. Land provides structure for an underground facility in Steven Holl's Nelson-Atkins Museum expansion, in Kansas City, Missouri. It dictates formal shape in Massimiliano

Fuksa's Niaux Caves Entrance Pavillion, in France. And it is construction material in Herzog and de Meuron's Dominus Winery, in California. Betsky establishes relationships by juxtaposing projects that would seem unrelated except for their conceptual use of land. By connecting a variety of projects under this lens, Betsky's curatorial skills are at their best.

Yet the liberal use of the word *land* as a concept can be confusing and ineffective. Betsky repeats it ad nauseum and in place of *ground*, *site*, and the more specific *dirt*, *pavement*, *gravel*, *grass*, and so on. In the process, it loses meaning. The book is full of sentences like: "[Landscrapers] take many forms, but in all cases they unfold the land, promising to lay a new ground on which we can erect an architecture of the land." And "Architecture is no more than a mark on a land that has been shaped to create a void." Betsky also forces some projects into his conceptual framework. For example, he reads the Minnaert Building, in Utrecht, by Neutelings' Riedijk as "carving land" since its red-pigmented concrete exterior is "[the architect's] own version of the land." Okay, but a stretch.

Still, as a slide show of projects that use land in different ways, the book is an interesting, if not an in-depth, resource. The two-page-per-project organization is as effective as a museum exposition on the topic: informative, but brief. Of course, delving too deeply into any given project might bring up issues other than land, complicating Betsky's narrow focus. *Megan Feehan*

Surface Architecture, *by David Leatherbarrow and Mohsen Mostafavi. MIT Press, 2002, 300 pages, $40.*

Mention the word *surface*, and most people think "superficial" or "shallow." But surface is fundamental in architecture. Exterior surface, along with form, conveys a building's function and triggers the more subjective determinations of whether it is pleasing or ugly, conventional or edgy, stodgy or spirited. Surface is also the aspect of architecture that has changed the most in recent decades. Early in the last century, new construction methods made possible the "free facade" and started architects thinking about the relationships between skin and structure and between modernity and tradition. New technologies have produced more food for thought, prompting the authors of *Surface Architecture* to ask how design can profit from them while remaining "neither independent nor subjugated to the domination of technology." Not a bad question.

In pondering it, Leatherbarrow and Mostafavi wander through recent history. Unfortunately, like Hansel and Gretel and the bread crumbs, they leave a trail of nearly useless sentences that don't prevent you from getting lost. Here's one: "The window as an element of separation formed a distance across which connection assumed recollection, or joining presumed memory, so constituting a horizon of yearning." Is there any good reason why theorists can't write simply and directly?

Compounding the vagueness and convolutions, the authors' organization of the text often seems governed by free association. They start with the early Modernists' infatuation with volume, modern production methods, and new materials and the movement's disdain for eclecticism and representation. They

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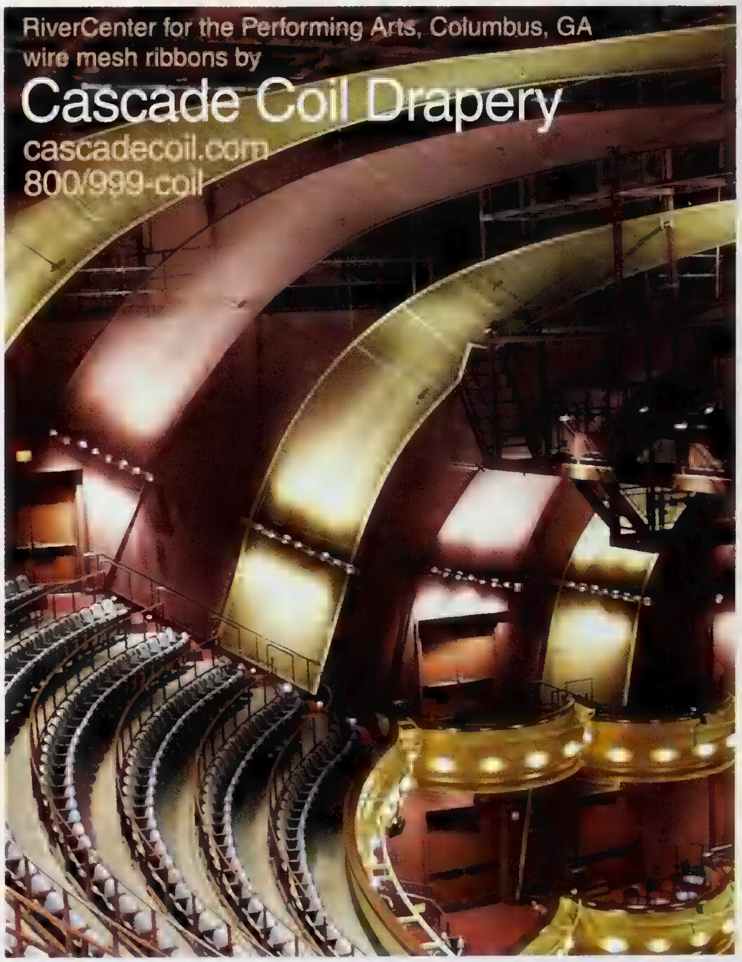

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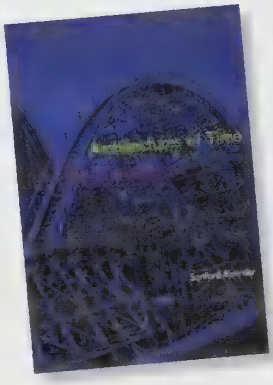
discuss Louis Kahn's attempt to achieve monumentalism within Modernism, then look at Minimalism, Louis Sullivan, Frank Lloyd Wright's treatment of the frame versus decoration, Le Corbusier's emphasis on horizontal windows as expressions of structure, Aalto's use of banked windows on curved walls, and more generally, the role of different window types. They examine approaches to cladding, starting with that of the Austrian Secessionists, then segue to Adolf Loos's contempt for ornament, and a discussion of surface appliqué in buildings. They explore Mies's utilitarian buildings as well as those by Albert Kahn, George Howe, Richard Neutra, Jean Prouvé, the Smithsons.

How do Leatherborrow and Mostafavi suggest resolving the conflict between production methods and surface treatment? They give as an example the work of Spanish architect Alejandro de la Sota, who uses found objects and a variety of materials to design buildings that express "something of the everyday but also the anonymous world of industrial products." They explain, "In a world so eager for representation, this architecture seems justly poised between reticence and invention." In their final chapter, the authors return to architecture's relationship to technology, but they fail to satisfactorily answer the question they posed: how design can benefit from technology while remaining "neither independent nor subjugated" to it Or did I miss something in the fog of words? *Andrea Oppenheimer Dean*

Architectures of Time, *Sanford Kwinter. Cambridge: MIT Press, 2002, 232 pages, $30 (cloth), $18 (paper).*



In *Architectures of Time*, Sanford Kwinter tells us in his preface that he had completed most of his thinking and writing about the relation of architecture and the dimension of time in the 1980s and early '90s. The manuscript was then lost in the mail, and Kwinter had to reconstruct it—at a point in his career when its importance to him was on the wane. Long stretches of the book are discourses on physics, time, relativity, and Kafka. In all of these, Kwinter is interested in relating Einstein's theory of relativity to notions of space and time, and how it is reflected in each.

Ultimately, Kwinter's goal is to show how Modern architecture reflected new concepts of space and time in ways similar to how they were reflected in science and art (particularly literature). Kwinter graciously suggests that readers interested primarily in design skip over the chapter on Kafka. Most engaging in this volume is the discussion of the work of the Italian Futurists—specifically Antonio Sant'Elia—and how they captured the essence of a new architecture, one tied to movement and the modern age. Kwinter presents an engaging analysis of Futurist projects, as represented in their sweeping perspectives.

But if you are looking for ideas that might easily be transferred to the design studio in this book, you're in for disappointment. Some nearly impenetrable writing only makes more frustrating how Kwinter's observations and ideas might be incorporated into everyday design. Perhaps it wasn't the writer's intent to make his theoretical speculations readily useful to architecture as it is practiced today. But that brings us to a question that many people ask about this discipline: What is "good" architectural theory? And perhaps even more important is to ask of a theoretical inquiry that only tenuously makes connections to the world of architecture: What good is it? *Michael J. Crosbie*

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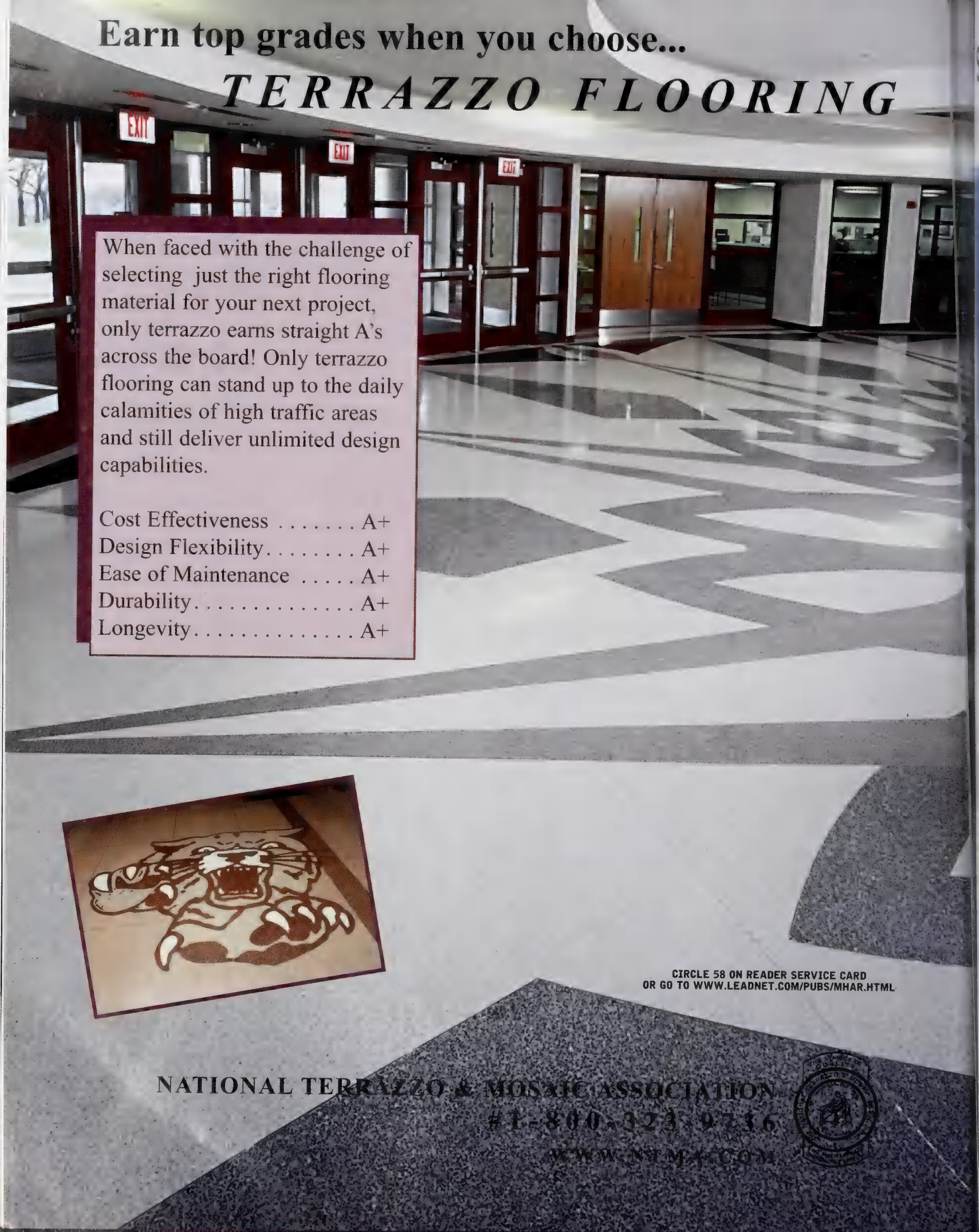

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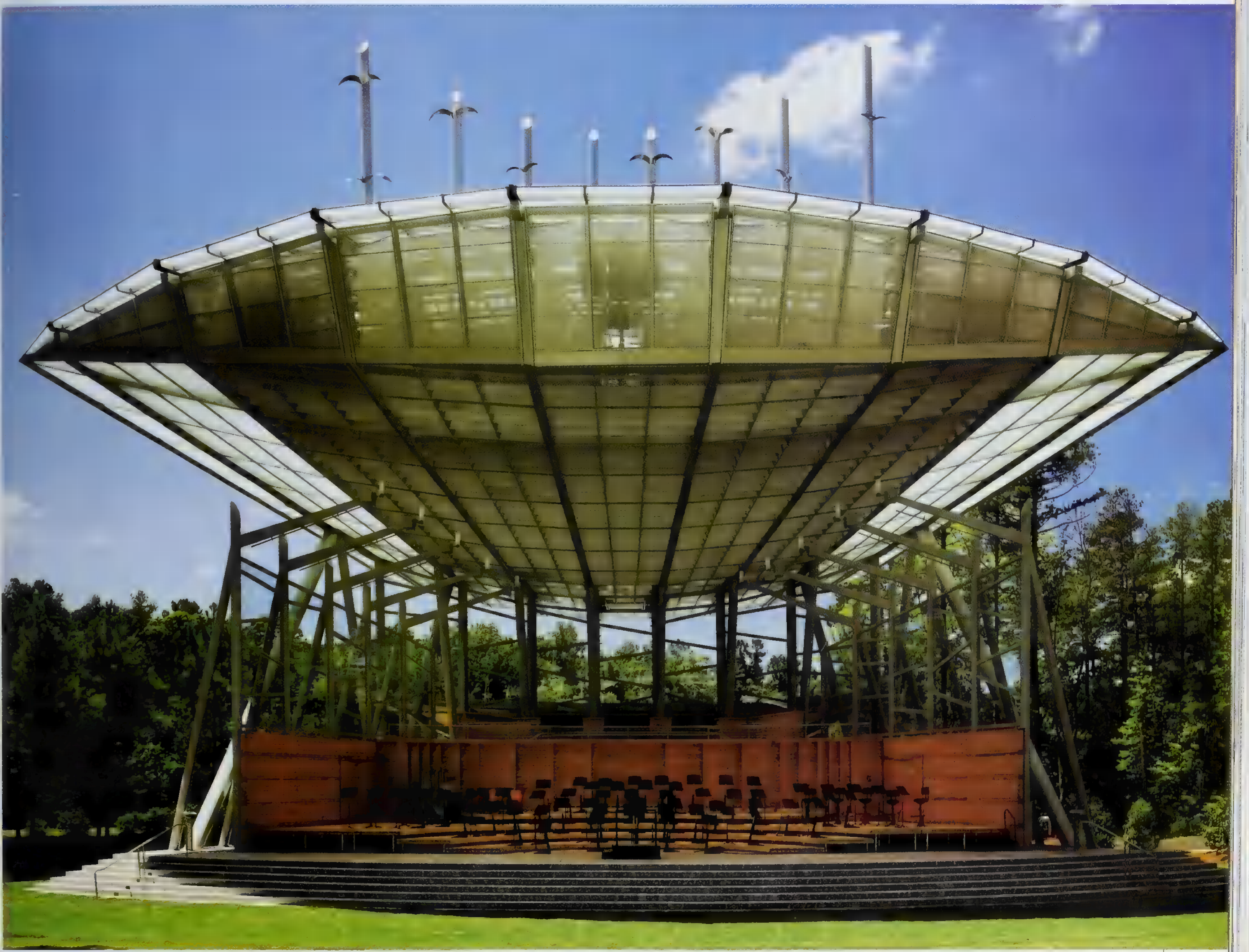
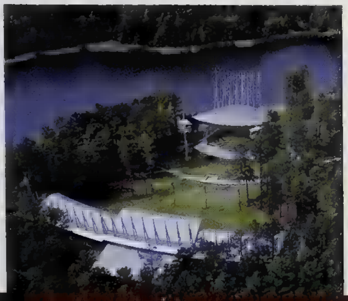


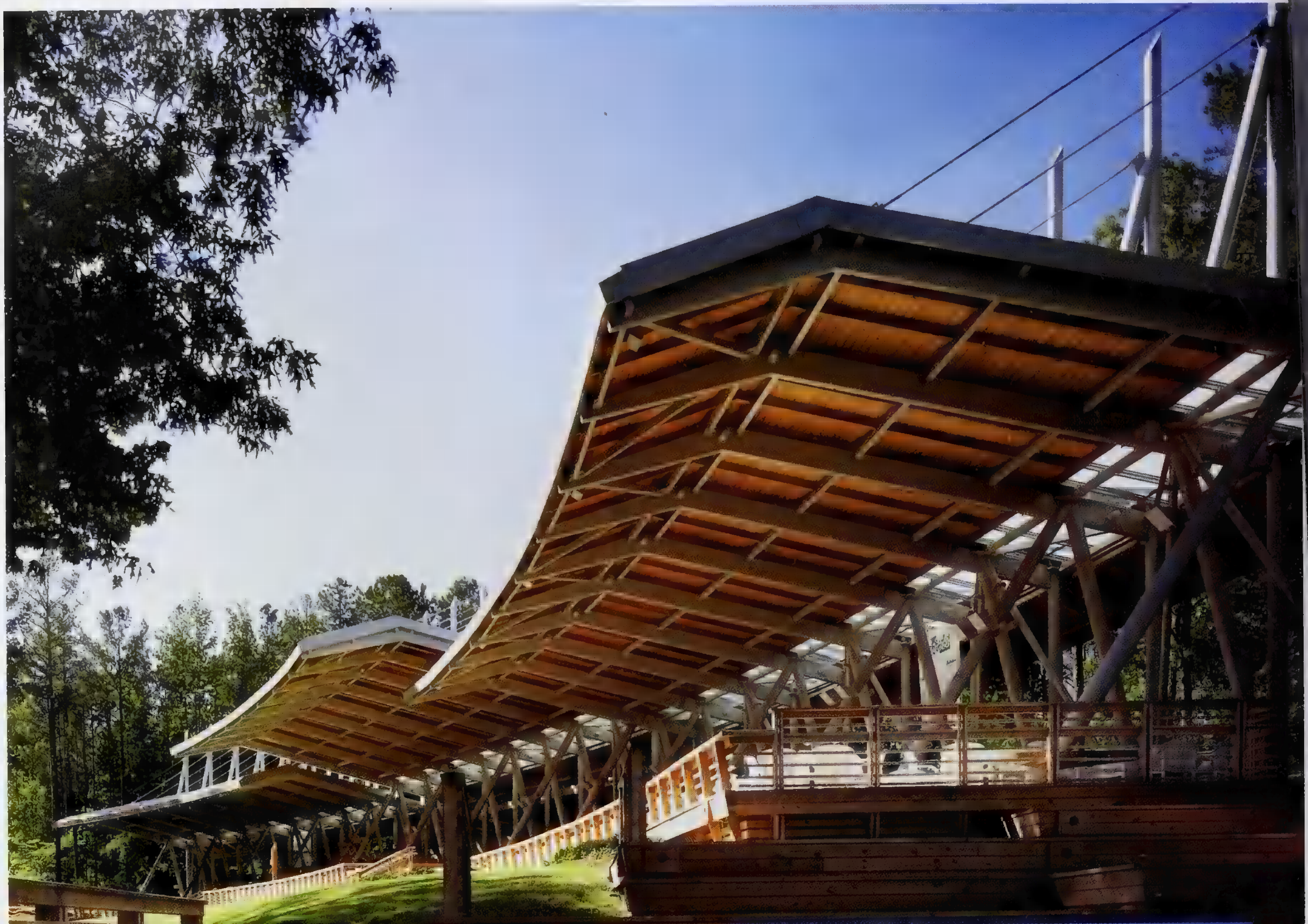
By Ingrid Whitehead

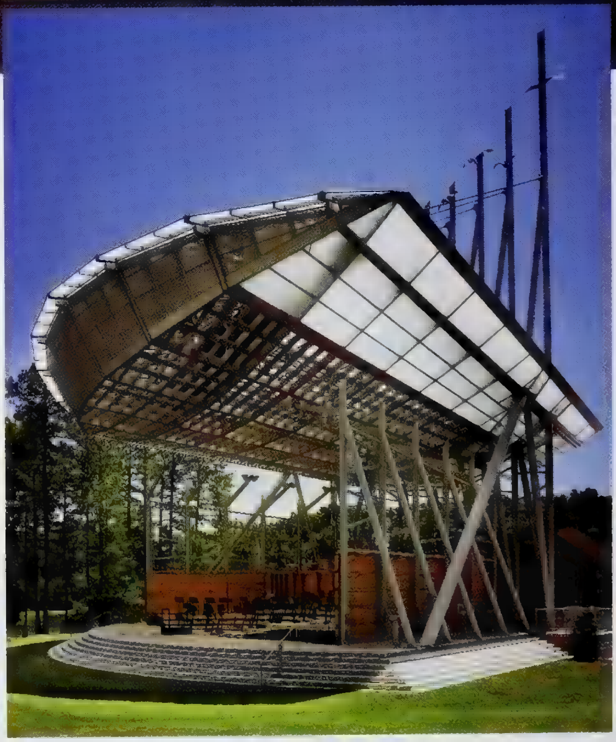
Big drama in a little clearing in North Carolina

Imagine a night in June. You're lying on a blanket, staring up at the stars, or occasionally standing by the stage nearby, as the strains of *Porgy and Bess* gently but powerfully fill the air. Hundreds of blankets form a patchwork quilt on the green around you, where the entire town has come out to enjoy live classical music and the company of fellow townspeople.



This vision inspired architect William Rawn, who created The Pavilion at Symphony Lake for the town of Cary, North Carolina—one of the summer homes for the North Carolina Symphony. Commissioned by then-mayor Koka Booth, the 34,000-square-foot group of buildings comprises a performance shell and a structure containing VIP dining, concession stands, rest rooms, and services. The $12 million project was conceived to give this suburban town a civic icon to encourage community interaction and pride.





Unlike traditional outdoor venues, The Pavilion at Symphony Lake has a VIP dining area (above) situated behind the open-seating area on the grass, giving everyone a great view of the stage (right).

Rawn had teamed with acoustician R. Lawrence Kirkegaard in 1994 to design the much-heralded Seiji Ozawa Hall at Tanglewood, in the Massachusetts Berkshires. Having heard about the success of that project, Mayor Booth asked Rawn to design the amphitheater on the shore of the man-made Symphony Lake, in Regency Park. Kirkegaard once again collaborated.

With site in mind, Rawn created latticelike structural steel poles, 80 feet tall, which mimic the tall pines in the park. The pavilion was placed at a 45-degree angle to the lake so that the audience always has a view of both stage and lake. A hanging glass roof shelters performers and bathes the stage in natural light during the day. The roof houses lighting equipment and contains computer-controlled flickering bulbs—like a basket of fireflies suspended above the performers.

"It's a decidedly contemporary structure," says Rawn, who admits he expected the town officials to request him to recreate a 19th-century-style design. "They had the guts to go for something modern. And everyone in Cary loves it." ■

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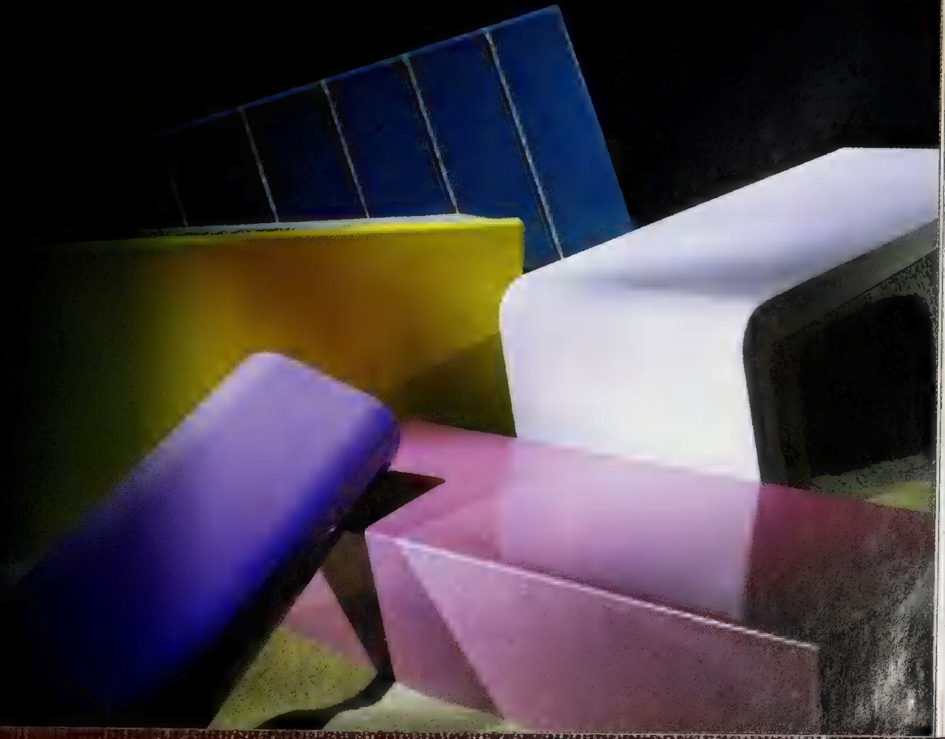

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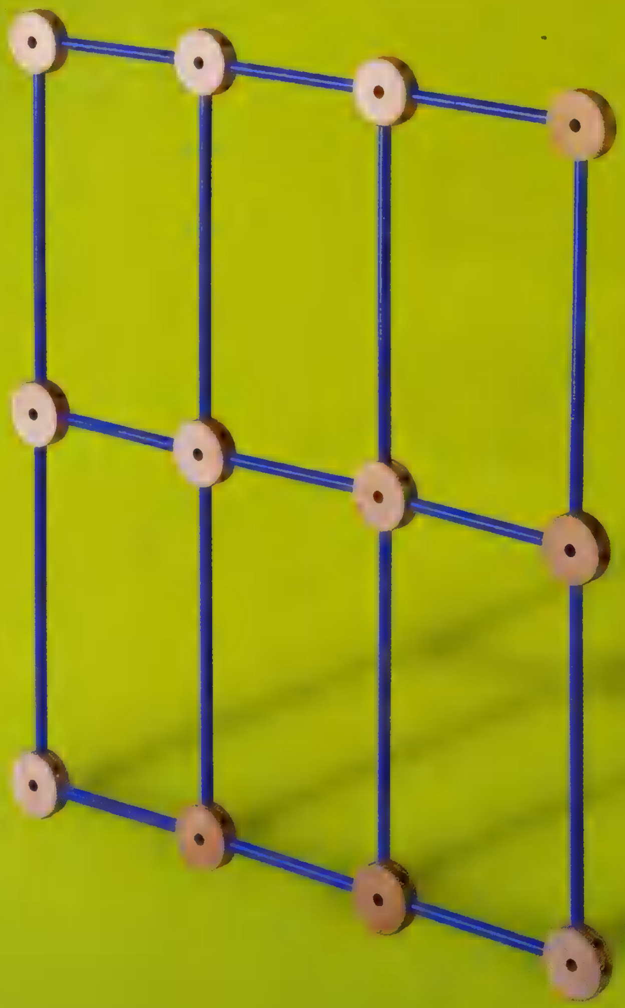

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By James S. Russell, AIA

Only 18 months ago, the megabuck glitterati clinked glasses at the unveiling of the Rem Koolhaas–designed Guggenheim Las Vegas [RECORD, January 2002, page 101]. It had promised to be one of those moments that history measures as characteristic of its era, just as the emergence of the spire of the Chrysler Building, only months before the stock market crashed, signaled the dizzy peak of Jazz Age optimism. Conjured as a moneymaker, the Las Vegas outpost finally—inevitably, it so recently seemed—merged art, architecture, brand culture, and commerce. It celebrated the values of the "bourgeois bohemians" who, according to author David Brooks (in his *Bobos in Paradise*, Touchstone, 2000), "have one foot in the bohemian world of creativity and another foot in the bourgeois realm of ambition and worldly success."

The Guggenheim Las Vegas is shuttered (temporarily, say officials), as is its sister institution, the Hermitage Guggenheim. The entrepreneurial vision of executive director Thomas Krens, which made possible the architectural event of the decade, Frank Gehry's Guggenheim Bilbao, has ended. That era of endless possibility began deflating along with the dot-com bubble, and evaporated with the broader, corruption-hastened collapse of the American stock market—source of so much Bobo wealth and hubris.

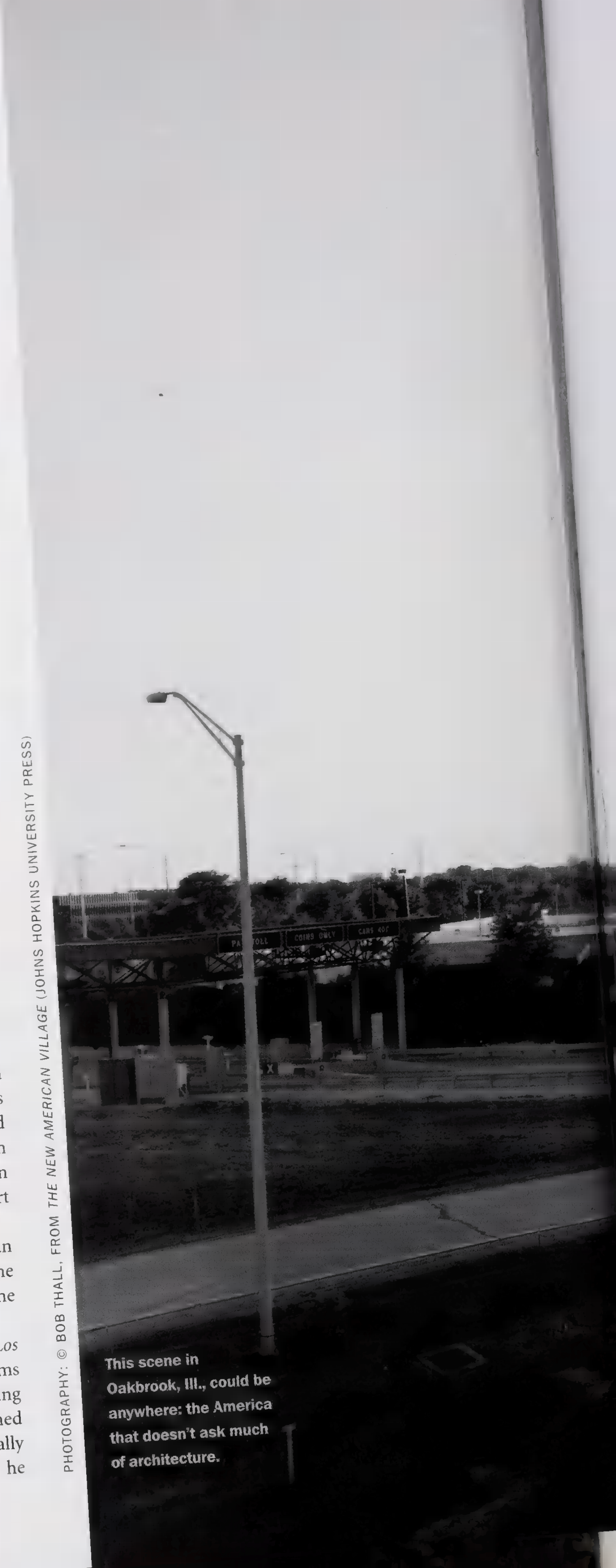
Then the terrorist attacks of September 11 shattered the nation's sense of its own inviolability. In that brutal spectacle, we found that we could not consider ourselves safe from large-scale terrorist acts, executed using the portable, inexpensive, and efficient technologies that were among the great industrial accomplishments of recent years. The terrorist attacks engaged the nation in a war of ideals, one that may have to be fought over an extended period using wartime's uncompromising measures.

In his book, Brooks argued that the Bobo elite had little use for politics and blurred what had once seemed the defining values of culture (Krens, for example, seeming to equate motorcycles with Mondrian). But a reassessment of national values is clearly under way, even if it is still only simmering. Can an anti-ideological nation that defines itself primarily by what it buys and projects no values beyond those embodied in commercial media fully engage a foe driven by moral and religious fervor?

Under such circumstances, enormously ambitious projects like the now-cancelled $650-million Guggenheim branch that would have stretched for a block or more along Manhattan's East River and loomed spectacularly over the East River Drive, appear to be very indulgent baubles (not to mention possible targets). The uncertainty of the times has stalled a number of other prominent projects, including the Magnes Museum in San Francisco (Daniel Libeskind) and the Whitney Museum expansion in New York (Rem Koolhaas/OMA). The Los Angeles County Museum of Art has shelved its massive OMA plan, announced only about a year ago.

Big, splashy urban trophies are but a tiny fraction of American architectural output, but there is a sense that such projects represent the profession and the limits of its possibilities. If architecture lives by the champagne fund-raiser, does it die by it?

This question emerged in a commentary written in the *Los Angeles Times* by its architecture critic, Nicolai Ouroussoff, which seems to echo a gathering unease in the profession. "Today, architects working in America are confined to serving a relatively small and entrenched elite—the corporate kingpins and aging philanthropists who typically make up the boards of the country's major cultural institutions," he



PHOTOGRAPHY: © BOB THALL, FROM *THE NEW AMERICAN VILLAGE* (JOHNS HOPKINS UNIVERSITY PRESS)

This scene in Oakbrook, Ill., could be anywhere: the America that doesn't ask much of architecture.

WHERE ARE WE NOW?

rchitecture's place in an era of evolving values

Does the simplistic real estate "product" that accumulates across urban America truly express its identity, values, and aspirations? Near O'Hare International Airport, Chicago, 1991 (top); Schaumberg, Ill., 1995 (left and opposite).

wrote in January. He worries that an architecture that serves as a "mere plaything for the rich and their institutions" speaks little to the city's real needs, especially in its poorer neighborhoods.

The assertiveness of contemporary architectural expression came under attack from another quarter last fall. In a panel, called Monument and Memory, sponsored by Columbia University's Department of Art History and Archaeology, Sherman Nuland, a surgeon and authority on death and healing declared, "I actually find myself offended by the thought that there will be a piece of architecture on that spot [Ground Zero], because, ultimately, architecture is about the architect." Another panelist, Leon Wieseltier, of *The New Republic*, added, "Architects in the aftermath of September 11 have been altogether too avid." Criticizing proposals for the site assembled by *New York Times* architecture critic Herbert Muschamp, he said, "There is something a little grotesque in the interpretation of Ground Zero as a lucky break for art, as the opportunity for advancement of a particular aesthetic cause."

Wieseltier is not the first to argue that no work of design could ever match the terror attack's magnitude of tragedy. "The planes that brought down the World Trade Center exposed, along with other frailties, the frailty of matter as a medium for the perpetuation of human progress," he added. Nor is Nuland alone in his naive assertion that a garden would somehow escape the visible hand of the designer. But there is something shocking in the idea that architecture lacks legitimacy as a means of cultural expression.

In flush economic times, it mattered less that people thought such things. Just as pop-styled, three-tenor spectacles have been thought to lure new audiences to "serious" music, there has certainly been a hope that the dramatic, sensuous, and even beautiful architectural form-making that has become de rigueur for ambitious institutions in America might build a broader public constituency for design. Anecdotally, it looks like more communities recognize the value of structures that offer amenity to their users and enhance their surroundings, especially in library-building programs, historic preservation, and federal courthouses. But with economic uncertainty comes pressure to dispense with public-spirited grace notes.

Is architecture a plaything of a value-free elite? If it isn't, why can't it more deeply express ideals in the day-to-day landscape?

Americans have tended to succumb to such pressure. Even after an extended era of great wealth, we shop not in some kind of American Rue de Rivoli, but in concrete hangers, which, if designed to recognize anything but the cheapness of their construction, offer a faux pediment carved out of Styrofoam and skimmed in synthetic stucco. America obsesses about its children and their education but increasingly churns out schools using the same catalog plans in the deserts of the West as in the mangroves of the Gulf Coast. And they little differ from nearby outlet malls.

America is not a poor nation even now, but it builds poor. A nation that works in warehouses, drives on massive slabs of asphalt at best embellished with a few trees to the indistinguishable bank, city hall, and hospital, is not asking architecture to say much.

Can architecture thrive in privatized culture?

In much of the capitalist world, architecture remains largely a public endeavor, underwritten by the state. In America, architects constantly adapt their public consciences and artistic aspirations to the ever-changing priorities of private wealth, which has a more powerful role in creating urban form here than in virtually any other developed nation. Sometimes the alignment of private capital and artistic intuition makes possible something thrilling, like the tower-dotted skylines that rose to dizzying heights in the 1920s. Skyscrapers, to be sure, have been the best advertisement for the commercial city ever since. In the past 20 years, however, private development has pretty much lost interest in using architecture to make a handsome skyline or advertise a company's place in the community.

In the 1980s, the rise of corporate raiders and "maximizing shareholder value" definitively ended an era in which corporations (motivated by genuine community commitment or paternalistic noblesse oblige—take your pick) considered buildings something more than warehouses for workers. Facilities since then have been regarded as profit-making assets in their own right, and any commitment to express a connection to a local community, to present corporate values in steel and glass, or to reflect by design the needs of business process have been all but banished. Business leaders have permitted themselves to be driven by a speculative norm of real estate (demanding only the generic and the identical; obsessed with the "exit strategy") because they could not find a way to value architectural nicety or invention.

The colossal commercial overbuilding of the 1980s, which created an inventory excess that hung over the industry for 10 years, might have taught everyone a lesson, but instead it led to a nationalized and concentrated development-finance process that is even more rigid and values the contributions of architects less than ever. It's nearly impossible to build innovatively, to recognize unique circumstances, or to choose technologies (to save energy, for example) that take longer than a few years to pay back. This is why the tremendous technological advancement one sees in commercial buildings outside the U.S. (especially in workplace design that is both low-energy and high amenity) cannot find a market here. And it is why the architect's role has been relegated to curtain-wall specifier and lobby decorator.

The nation has tolerated this temporary, disposable urbanism simply by moving farther out into the semirural fringes, vastly expanding the edges of metropolitan regions. The search for a place that is, as suburban historian Robert Fishman has written, "freed from the corruption of the city, restored to harmony with nature, endowed with wealth and independence, yet protected by a close-knit, stable community" seems today to be unending. As a nation, we are still largely unwilling to consider that the very mobility that allows us to build our dream at the bucolic urban edge embodies the means by which the oak woods next door becomes Oak Woods Estates.

Is it a style thing?

Part of what makes our era confusing is that it offers an enormous aesthetic diversity. You can see a debt to 20th-century Modernism in much of what is built today, but most is not tethered to a single theoretical or social movement. Architecture does not deserve a central place in culture, many observers argue, because people don't like what architects design. "Architecture should be understandable to everyone," wrote Francis Morrone recently in *The New Criterion*, in a story critical of today's aesthetic innovation. "The urban architect simply does not possess the right to impose his aesthetic vision on the public." This echoes the plaints of many political conservatives, who increasingly see today's sculpturally spectacular and assertive designs as emanating from a leftist political agenda.

The vaguely Modernistic boxy stores and slablike apartments that dominate the landscape reflect a cheapness of construction.

Aside from how authoritarian Morrone sounds, those who, like him, argue for a vision of architectural civility through historic style seem blind to the conservative vision of unfettered capitalism and individualism which is precisely the agent of the chaos they abhor in urban cityscapes. If today's buildings seem unneighborly, or inconsistent, or ignorant of history, that reflects America and its priorities today, an America made largely to conservative individualistic and antigovernment values.

The boxy stores and slablike apartments that dominate the landscape may look vaguely Modernistic, but they reflect not a stylistic orthodoxy but cheapness of construction. It's the euphemistic "cost effectiveness" applauded by conservatives and enforced by Wall Street analysts, who do not regard public spiritedness in architecture as prudently contributing to the bottom line.

Aesthetic individualism has been the source of dynamism within the American architectural scene, the reason it is intellectually health in spite of the inability of so many talented people to build beyond th lowest-common-denominator commercial norm. Impressionist painter made compelling art of the dark hulk of the locomotive thundering through the flower-bedecked countryside. The fractured topographic buildings we see these days reflect an awe of the empty freewayscapes—today's emblematic urban form. Frank Gehry infuriated contextualists in the Pacific Northwest by making a sensuous collision of electric-guitar-colored forms for a rock 'n' roll museum [RECORD, August 2000, page 126]. He didn't build a "regionalist" pavilion of fir beams; the museum's "context" was a sea of surface parking.

In time we'll know whether today's explorations into the ironies, contradictions, and bizarre juxtapositions innate to culture now have made an art of lasting value. But attempting to refract the world the nation inhabits is a serious endeavor that deserves respect, even if it does not always work. The dynamism and possibility of America is what appeals to Europeans like Rem Koolhaas, who come out of cultures much more comfortable with architecture and much more willing to spend public and private money on it.

The deal architects and society make

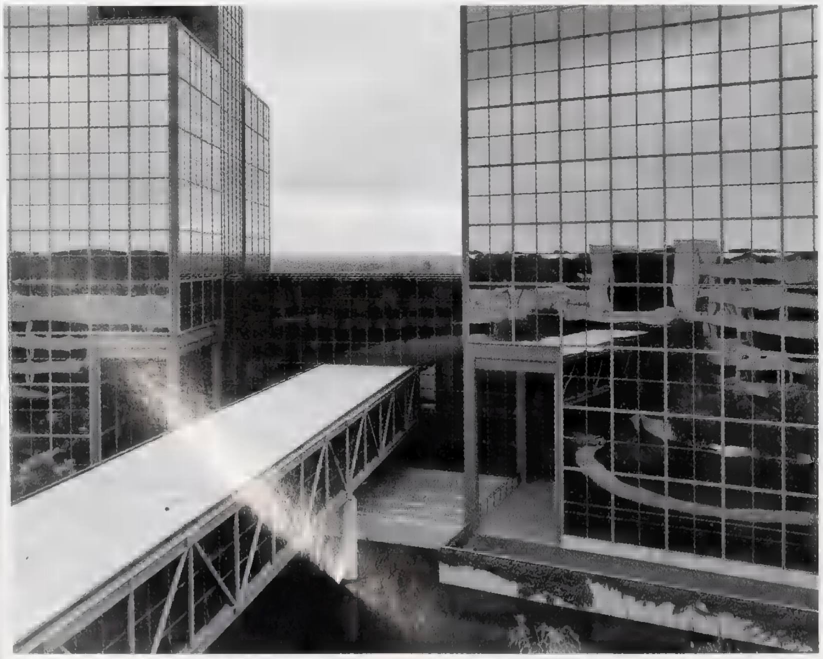
Much of today's most adventurous work does not meet Morrone's criterion of "understandable to everyone," and he is certainly not alone in finding much contemporary work aesthetically objectionable. But it was Daniel Libeskind, presumably not a favorite of aesthetic conservatives, who made a stirring defense of architecture's place in public culture at the Columbia panel last fall.

He argued for architecture as an expression of even such emotional abstractions as memory and loss. "Buildings are transformation of inert materials—stone, concrete, glass—into something living. And in that sense, they really speak a language, both communicative and also silent," Libeskind said. "Space," he added "is actually something like a person, a physiognomy, a soul, a spiritual entity given to a particular locale. And that's the genius loci that we feel when we are in a place." The material urban world is not only inescapable, he argued, it shapes our values and culture as much as any form of art, literature, or debate does. "We're not at home in language. We're at home at home."

The architectural community, whatever its aesthetic proclivities, largely rallies around the idea that cities should be civil places and that civility should be expressed by what people build. But what people build cannot be separated from their values.

European cities, even new ones, tend to look more orderly and their streets more architecturally collegial than do American cities. History is recognized and the nature of the city is, as Daniel Libeskind has noted, "of concern to everyone."

These values, it must be added, are bolstered by the commitment of a great deal of public money for the creation of architecture and the nurturing of a vital architectural culture. The enormous expressive bravura we witness in much international work does not operate in an aesthetic vacuum but is tethered to a social, technological, or ecological ideal. This is



American cities are full of bleak, boxy office towers, such as this one in Schaumberg, Ill.

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Americans unendingly search for authenticity—but don't build it. Route 59, Naperville, Ill., 1992 (left).

what has helped build and retain a public consensus for public buildings.

Consequently, society authorizes architects to build much more than museums that enhance board-member egos or glitzy restaurants for celebrity chefs. They build housing, day-care centers, social centers, schools. They design roads and bridges.

Dare architecture represent ideals?

Since De Toqueville, America has been described as a nation of joiners. Community feeling and participation have eroded in recent years, according to Robert D. Putnam, whose book *Bowling Alone* (Touchstone, 2000) asserted that the spatially and socially segregated urban places we make contribute to a loss of community engagement. Whether in the desolate neighborhoods of abandoned industrial centers or in the gated communities of the disconnected pods of sidewalkless suburbia, there's not much about the built environment today that expresses a sense of connectedness or common values.

If we don't have a sense of community, we don't have any reason to build to any but our own individual values or tastes. If we fail to support architecture that speaks to common values, it is not surprising that we use our best architects only when a certain level of spectacle is called for or as a toy for the wealthy. Nor should it be surprising that these projects alone fail to bring vitality to urban places or fundamentally transform them. (For all the attention the Bilbao Guggenheim has garnered, it did not on its own transform the city. A program of public investment in airports, a subway, and other cultural facilities reinforced the job the museum did of putting the city on the map.)

As the nation reconsiders its values, should the places we build express what we share rather than aggrandize who we are?

Architects have long defined themselves as people who will make lives better. Is this necessary to retain legitimacy as a profession? Or does such a definition marginalize practitioners in a culture that prizes construction that costs little and that is supposed to deliver the maximum dollar turnover per square foot?

Pragmatically, AIA's agenda in Washington succeeds, pitted as it often is against much larger, better funded special interests, in large part because people do see architects as the kind of people who want to put the community's larger welfare first. That is a very precious reputation that we will pay dearly to squander.

Leon Wieseltier was not the on observer to see architects as "too avid" in the spe with which they began to organize ad hoc rebuil ing coalitions, like New York New Visions, after th September 11 disaster. But the effort proved t have enormous influence over the rebuilding, and the volunteers hav reaped enormous public appreciation. The consortium was there to fill planning void that yawned because local officials were so unused to plannin and could not put together their own efforts for months afterward.

Such important efforts notwithstanding, the rewards for actin to advance the ideals of a larger society are, for architects, slim. There ar those who say our most adventurous designers are not socially responsible but there is not now a substantial milieu for architects to be socially responsible in. As a nation, in our roles as public and private clients, we don't make it easy to build ecologically. We expect architects to accept below-cost fees for doing bureaucratically ensnared "affordable" housing. To the extent that they are built at all, senior centers, hospitals, clinics, and day-care centers hew to the same painted-drywall, dropped-ceiling, and fluorescent-light norm as everything else. Architects are shut out of bridge design (as well as most other forms of infrastructure building) for fear that they will make public works cost more.

One can argue that this is the profession's own fault, that it does not work hard enough to demonstrate the very good things it can do, and such criticisms no doubt have some basis. At some point, however, it's people—individually, in government, in business—who must commit to societal values architecture is capable of expressing.

Government has been turned into such an evil word that direct investment in transportation, in schools and colleges, and in other kinds of public facilities is suspect today, whatever its value to the economy as well as to our health as a society. (Ask the average business group what its greatest priorities are and you usually hear "improve the quality of the workforce"—that is, invest in education—and "improve transportation," another direct government investment.) Instead, we manipulate the tax code, hoping to spur greater consumer purchases or to get businesses to buy equipment they would otherwise not order.

Our fear of making investments in a more workable and amenable public realm run deeper than the political sensibilities of the moment. We think it's too hard to find political consensus. We're afraid we'll spend too much—be seen as public spendthrifts. We fear government making mistakes. And if we try to make communities in new ways or innovate in whatever way, we will make mistakes.

Perhaps this is the moment to be gutsier; to put our money and our best thinking (and some of our cash) into schools, transportation, housing for those who need it, public places—places that exemplify our ability to work together and help each other; places that express what we share rather than aggrandizing who we are. We can propose architecture that's not just about "adding the aesthetics," but about using building fabric to meet the ample real needs out there. If America wants to stand for something—not just in the world, but within their own communities—and wants to pass those values on, architecture remains the most permanent barometer of a civic culture. ■

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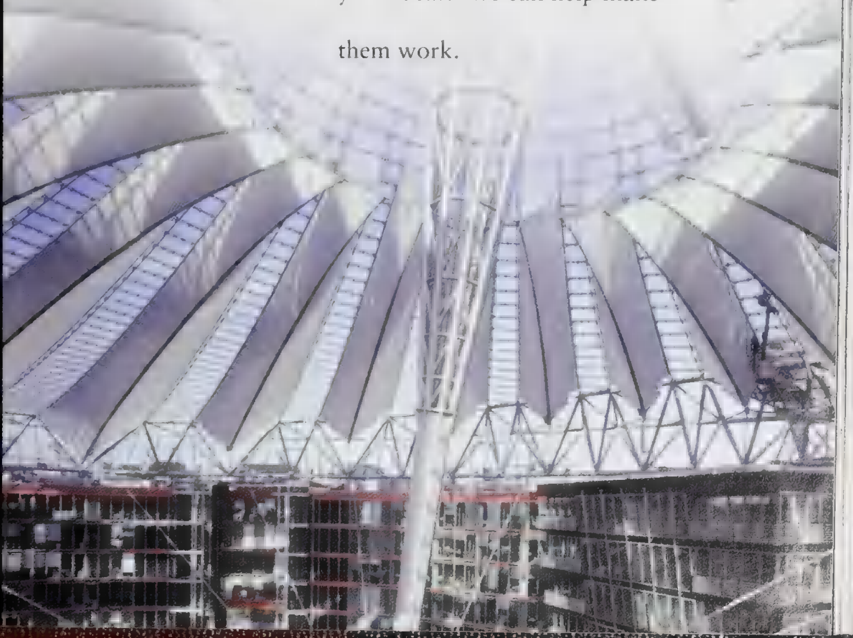

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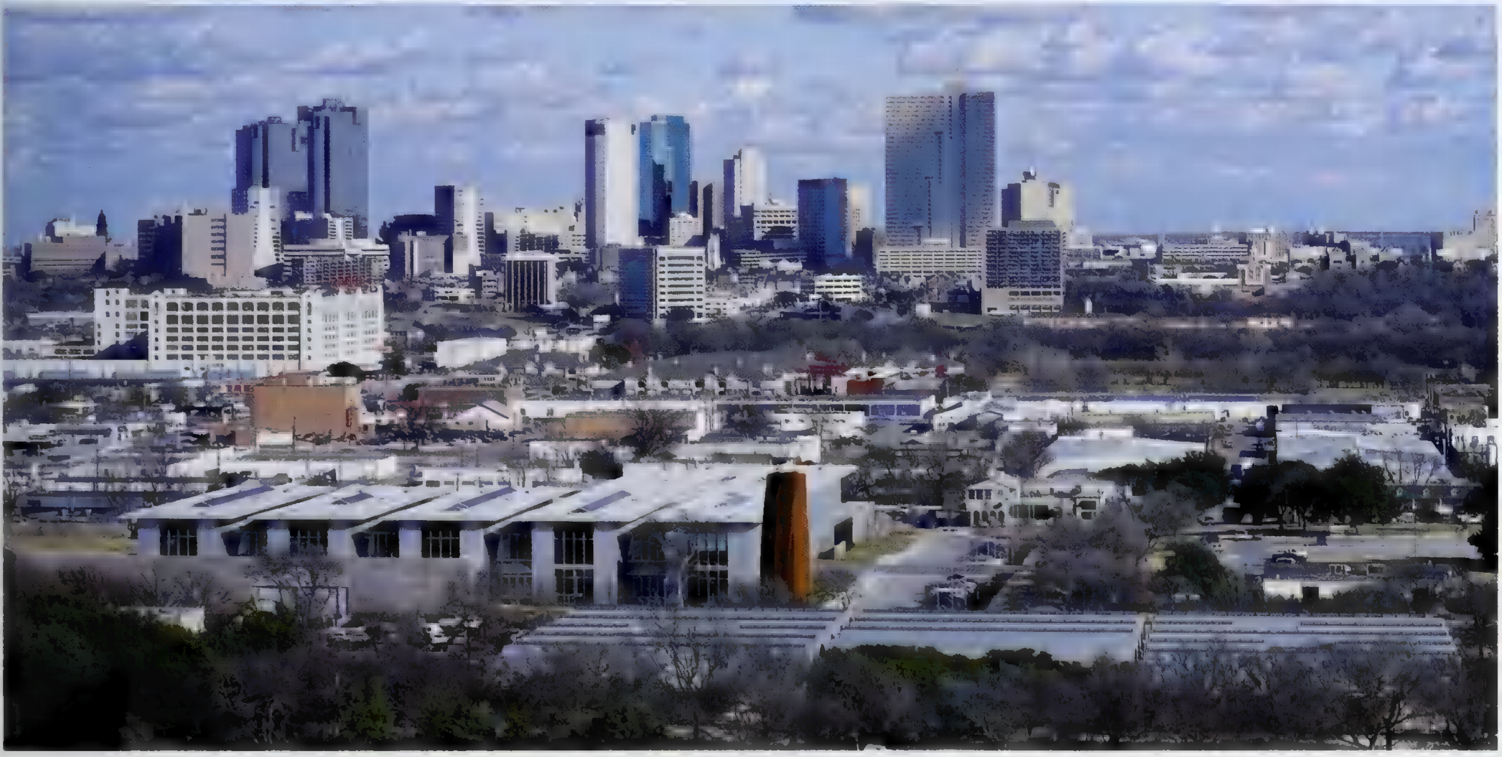
The 153,000-square-foot Forth Worth Modern is the larges museum of postwar art in the U.S. after New York's Museum Modern Art. The building sits on an 11-acre site (opposite) at the edge of town.

Tadao **Ando** brings his concrete-and-glass poetry to the Texas plains at his new MODERN ART MUSEUM OF FORT WORTH



By David Dillon

Tadao Ando once described his basic architectural intention as "creating spiritual worlds, with spaces so strong and deep that [they] will penetrate to the people who contact them." The luminous chapels in Japan that launched his career (the Church of the Light, 1989, and the Water Temple, 1991) fulfilled that ambition, as does the new Modern Art Museum of Fort Worth. Monumental without being overpowering, the building uses contemporary materials and details to create serene spaces where visitors can commune with art, nature, and themselves. In an era of billowing titanium walls and fluttering brise-soleils, the Modern speaks in a calm, assured voice about the importance of silence, solitude, and craftsmanship.

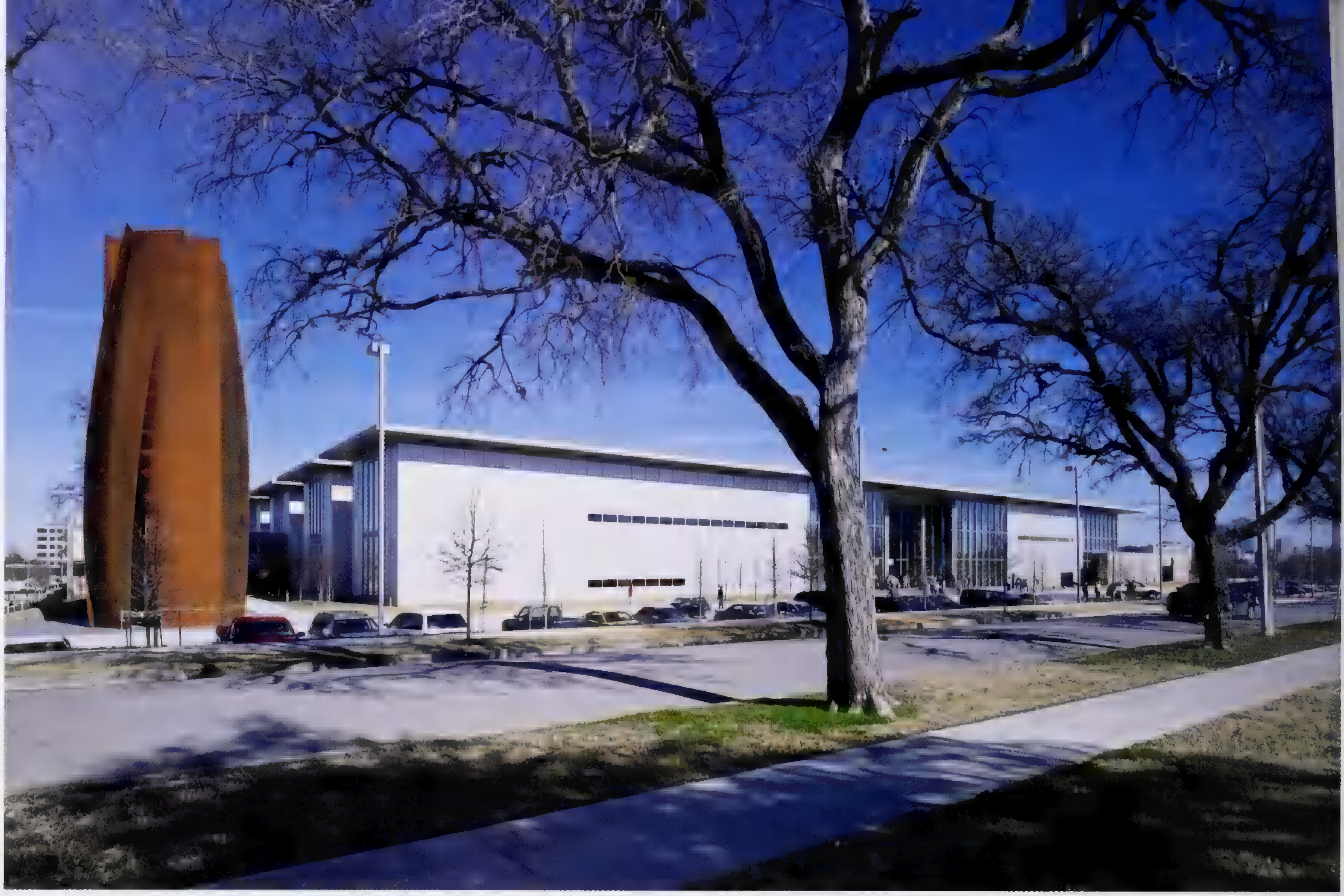
"I think of this museum as the heart and center of the community," Ando said at the dedication in December 2002, "a place where people come together, like a church." Yet spirituality is not the first thing that comes to mind as you approach the Modern. The main facade, along Darnell Street, is a collage of aluminum and glass, coolly corporate and somewhat generic, like a brochure photo for a Fortune 500 company. "Is this all?" you wonder.

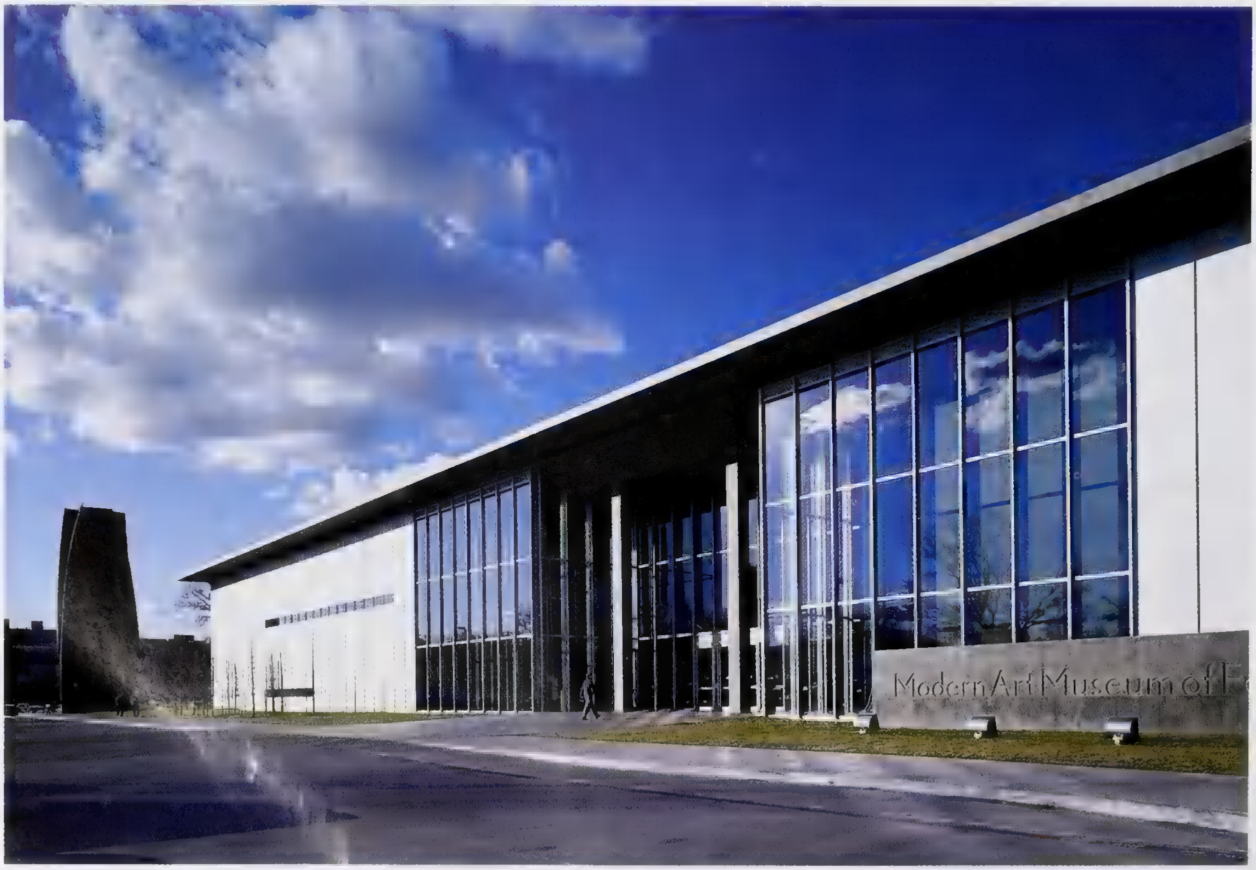
Fortunately not. The minute you enter the lobby, space explodes upward and outward toward a sculpture garden with a reflecting pool that bounces light off walls and into corners. For a moment, the building dematerializes and all you see is earth, water, and sky—nature and architecture in rare harmonious balance. This play between inside and outside continues through the building, from the café to a transition space, modeled on the traditional Japanese *engawa*, that edges the first-floor galleries to a narrow glassy staircase on the north side, which appears like a surprise gift.

Then the details coalesce and you see that the Modern is really a building within a building, an aluminum-and-glass shell wrapping a dense concrete core. Although the basic plan—five parallel pavilions framing a reflecting pool—suggests repetition and uniformity, the structure has nei-

Contributing editor David Dillon is the architecture critic of The Dallas Morning News.

Project: *Modern Art Museum of Fort Worth, Fort Worth, Texas*
Design architect: *Tadao Ando Architect & Associates—Tadao Ando, FAIA, principal; Masataka Yano, Kulapat Yantrasast*
Architect of record: *Kendall/Heaton Associates—William Kendall, FAIA, managing principal; Laurence Burns, AIA, executive principal; Rollie Childers, AIA, principal in charge; Jory Alexander, AIA, interior designer; Nobuhiko Shoga, team coordinator*
Consulting architect: *Richard Fitzgerald & Associates*
Engineers: *Thornton-Tomasetti (structural); CHP and Associates (m/e/p); Huitt-Zollars (civil)*
Consultants: *SWA Group (landscape); George Sexton (lighting); Cerami and Associates (acoustical); Peter M. Muller (curtain wall)*
General contractor: *Linbeck Construction*





As with many other Ando buildings, the museum's entry facade (left and above) is understated and offers few clues to what lies inside. Richard Serra's 67-foot-tall, 230-ton Cor-ten steel sculpture, *Vortex* (left in photo above), stands at the corner of the building and provides a vertical counterpoint to the horizontal thrust of the roof.

ther. It is full of wonderment created by Ando's play of one element against another: solid and void, heavy and light, open and closed, East and West.

Ando got the commission in a 1997 design competition, beating out Arata Isozaki, Ricardo Legorreta, and three other architects for the $65 million job. The Modern had long been the poor museum in a rich museum town and desperately wanted a building that would put it on the map and also stand up to Louis Kahn's sublime Kimbell Art Museum across the street. Ando gave them both.

His original plan called for a total of 230,000 square feet, 75,000 of it for galleries. That was more than the museum needed or could afford, so he gradually cut it back to 153,000 square feet, a third of it for art. The six rectangular pavilions, an unambiguous reference to the Kimbell's six vaults, were reduced to five, and some of the support space was eliminated. Even then, the new building is four times the size of the old one, which is being converted to a community arts center.

ANDO IS A BUILDER NOT A SCULPTOR. WHAT HAPPENS OUTSIDE IS NEVER AS IMPORTANT AS WHAT HAPPENS INSIDE.

Despite the editing, the essence of Ando's original design remains intact. Unlike Frank Gehry or Santiago Calatrava, Ando is a builder rather than a sculptor. What happens outside is never as important to him as what happens inside, which may explain why the Modern has four walls but only one real facade, the others being concealed by loading docks, parking lots, and landscaped berms.

Although there is no right way to walk through the building, most visitors turn left, past the information desk and a remarkably discreet museum shop, and follow a curving concrete wall into the first gallery. This ellipse—a calculated counterpoint to the linearity of the rest of the structure—forms a kind of side chapel devoted to a single work, Anselm Kiefer's sculpture *Book with Wings*. A large Kiefer painting dominates an end wall, a small Francis Bacon self-portrait off to one side. That's it. Out of 2,750 works in the museum's permanent collection, curator Michael Auping chose to exhibit only 154, as if the only proper response to a windfall of space were to waste some of it. In his shrewd installation, less becomes more, subtraction more revealing than addition.

The main exhibition galleries are large white rectangles suited to the scale of a Robert Motherwell or a Jackson Pollock. Yet, as elsewhere, what seems familiar turns out to be otherwise. Some galleries are neatly self-contained, while others burst open with views of the garden and reflecting pool or the downtown skyline. One minute you are looking down from the second floor at a Morris Louis or Richard Diebenkorn, the next you are glancing up a staircase at a self-portrait of a fright-wigged Andy Warhol. One of the most remarkable spaces is a two-story concrete gallery containing Martin Puryear's *Ladder for Booker T. Washington*. Whether viewed from

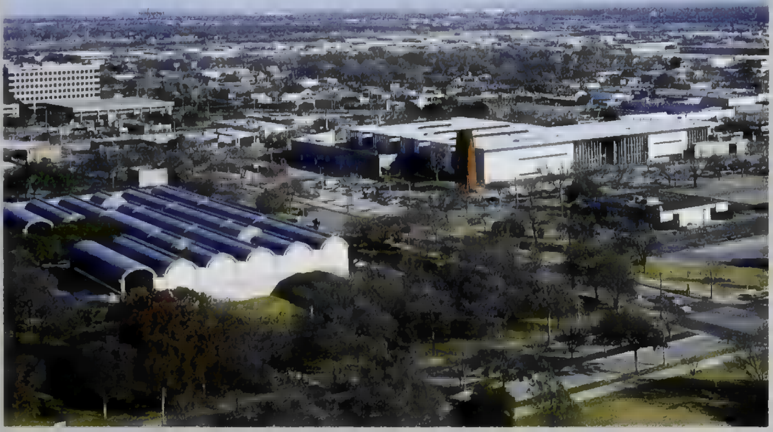
THE MODERN BEEFS UP A CULTURAL DISTRICT THAT'S STILL A WORK IN PROGRESS

Fort Worth's Cultural District is uniquely American, with calf ropers and Cézanne connoisseurs occupying the same block, sometimes the same building. Within its 950 acres are three exceptional art museums designed by a triumvirate of Pritzker Prize and AIA Gold Medal winners: the Amon Carter (opened in 1961 and designed by Philip Johnson), the Kimbell (opened in 1972 and designed by Louis Kahn), and now the new Modern, the latter two directly across the street from one another. Add a theater, coliseum, botanic garden, science museum, and a Cowgirl Hall of Fame and equestrian center that draws a million visitors each year, and you have a remarkable cultural bouillabaisse.

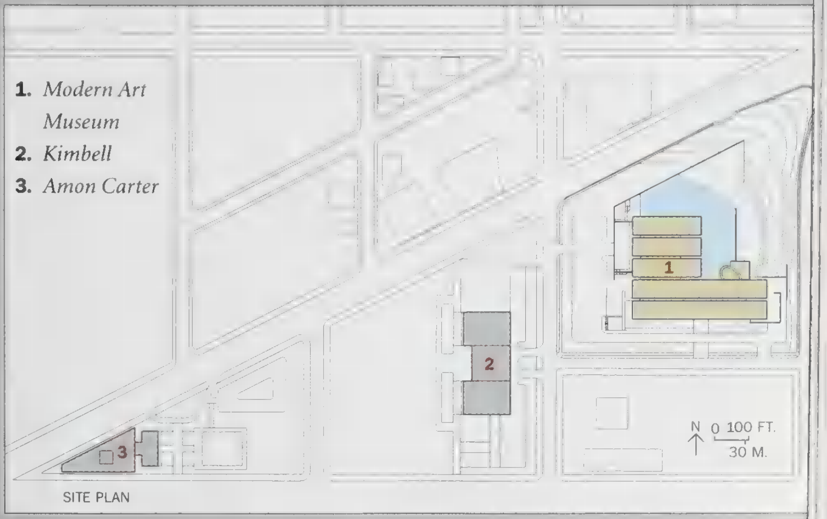
From a planning perspective, however, the District is still an archipelago of discrete attractions with tentative connections to one another and to the surrounding neighborhood. Parking lots and ramshackle buildings line its approaches; there aren't enough signs, sidewalks, and other pedestrian amenities. Although major exhibitions attract overflow crowds, visitors don't hang around afterward because of the dearth of shops, restaurants, and gathering places.

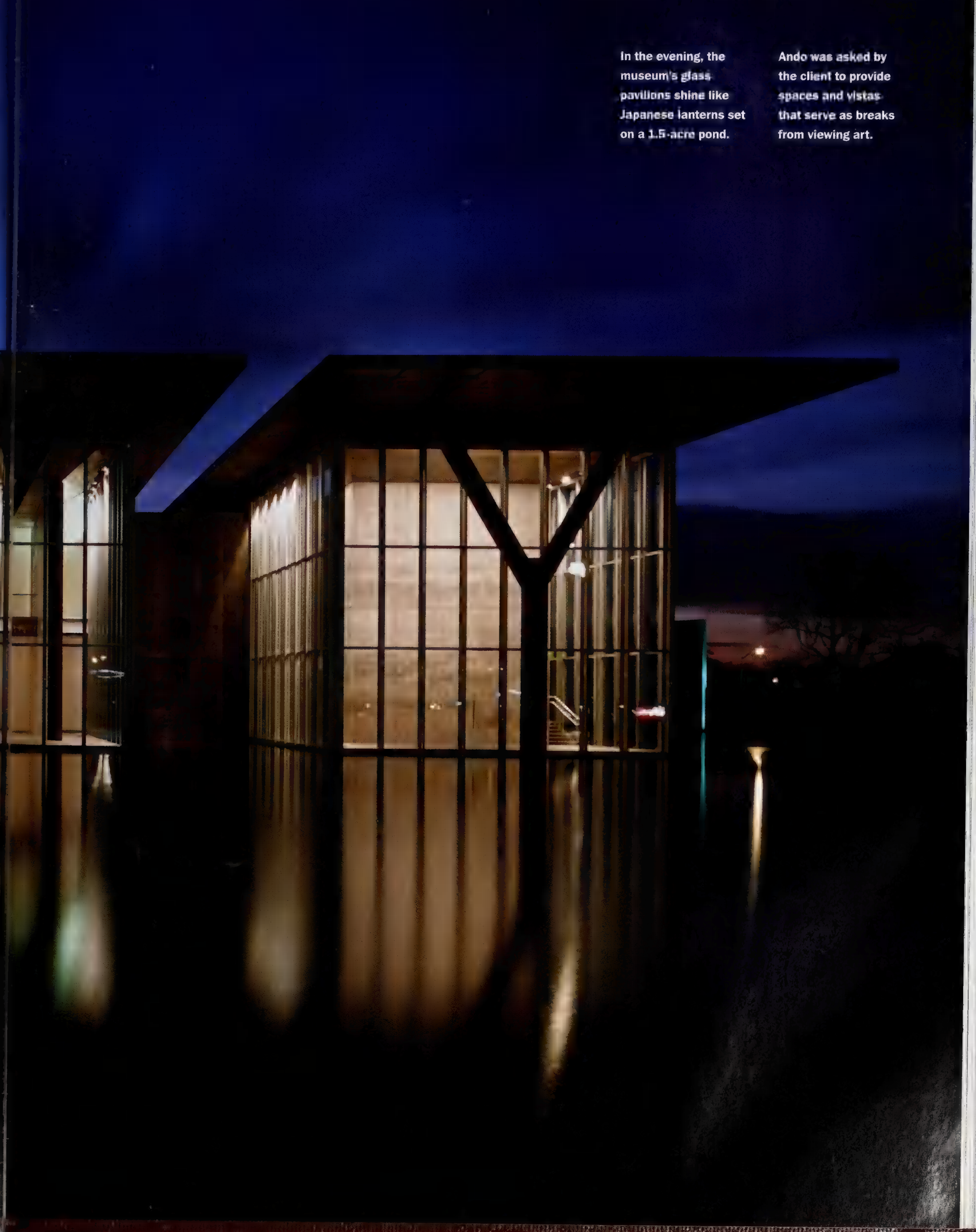
While its new building has propelled the Modern into the top tier of contemporary art museums, it has also highlighted the need for more balanced development within and around the District—more boulevards, plazas, and other connective tissue, along with better links to adjacent neighborhoods.

An urban village of shops and apartments has been proposed for the District's eastern edge, and there's talk of a hotel and a light-rail link to the stockyards and Fort Worth's bustling downtown. If one or two of these projects pans out, the Cultural District could finally become the coherent environment that its name implies. *D.D.*



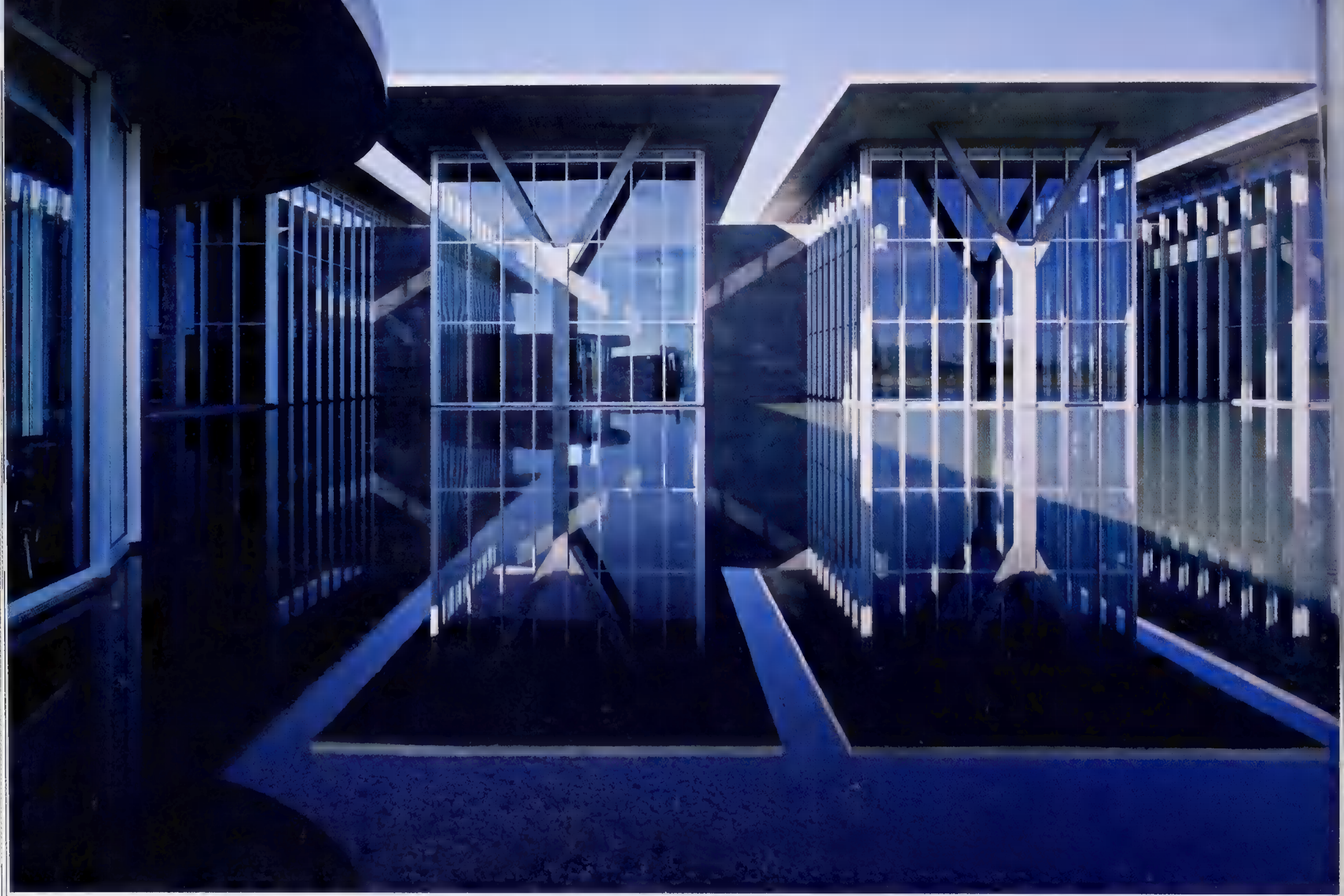
The long pavilions of the Modern (right in photo above) pay homage to the famous vaults of Kahn's Kimbell (left in photo).

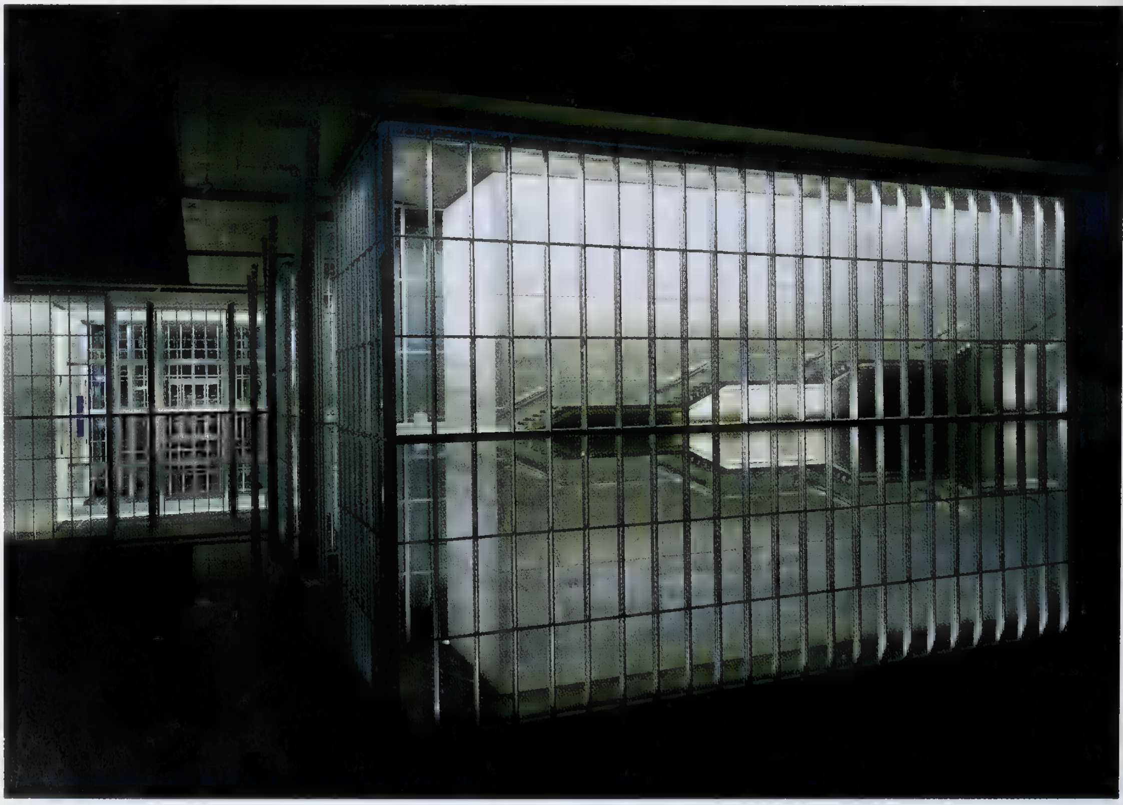




In the evening, the museum's glass pavilions shine like Japanese lanterns set on a 1.5-acre pond.

Ando was asked by the client to provide spaces and vistas that serve as breaks from viewing art.





Ando designed the pavilions as long glass boxes with concrete cores (above). A long stair overlooking the pond helps animate the northernmost pavilion (right).

Ando turns concrete and structural elements into works of art

Tadao Ando is the Leonardo of architectural concrete, and in the Modern Art Museum of Fort Worth he produced a masterpiece. Every wall in the building was scraped by hand until it was smooth as silk. Corners are sharp enough to cut paper, and switch plates and smoke alarms have surgically precise ⅛-inch reveals.

"He never quit designing," recalls Paul Sipes, project manager for Linbeck Construction Corporation "He was always striving for perfection. The fact that nobody can ever achieve it didn't stop him."

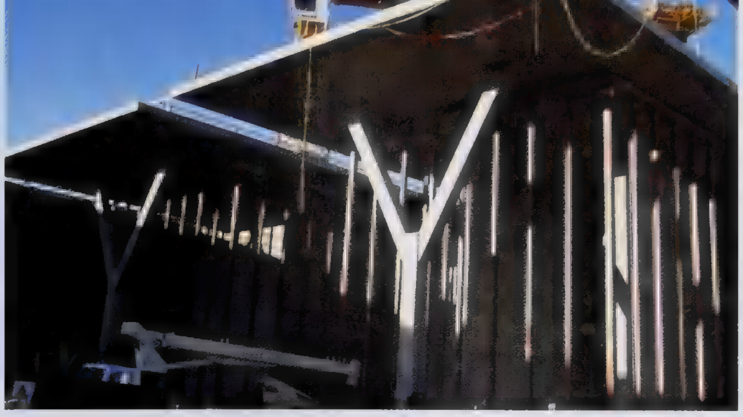
The toughest job was casting the dramatic Y columns that support the museum's cantilevered roofs. Ando wanted them poured in place as a single piece, but the contractor and structural engineer concluded that a vibrator working at such a steep angle would destroy the expensive wood forms. So they decided to cast the arms and stem separately in Weesa board forms, then place the diagonal pieces in a special steel cradle, connected by a collar, to form a V. The entire unit was then hoisted into place atop the stem, the various connecting rods and bolts concealed by a special sleeve that makes the completed Y look like one piece.

Ando wrapped the individual pavilions in 12-by-5-foot panels of glass, each one three layers thick for insulation and ultraviolet protection. (An early conceptual design called for nearly mullionless panels measuring 36 feet high and 18 feet wide, but nobody could manufacture them.) The panels are hung on slender steel columns painted the same color as the mullions so that they disappear. At night, the pavilions glow like gigantic Japanese lanterns.

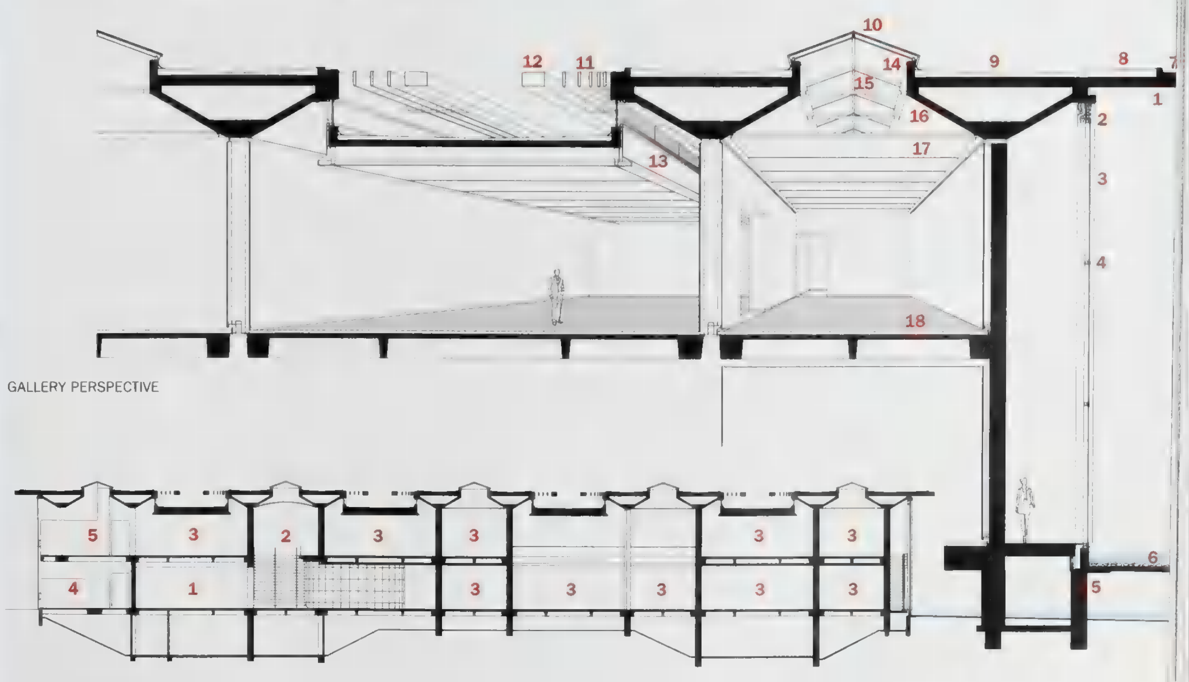
Daylight is the soul of Ando's design. To introduce it into the galleries without damaging the art, he and consultant George Sexton developed a sophisticated system of filters, louvers, and skylights. The vaulted ceiling above the grand staircase, for example, consists of a layer of stretched translucent fabric with a filter above to distribute light evenly around the vault. In the exhibition galleries, they installed a series of fixed louvers, which direct light onto the curved concrete haunches that support the roof and down into the galleries.

For Ando, the Kimbell is a benchmark of Modernist craftsmanship. One of his goals for his building, he said, was to "achieve the same level of construction" as Kahn did. He succeeded. *D.D.*

A system of filters, louvers, and skylights brings daylight into the galleries (drawings below), built of concrete and glass (right and above).



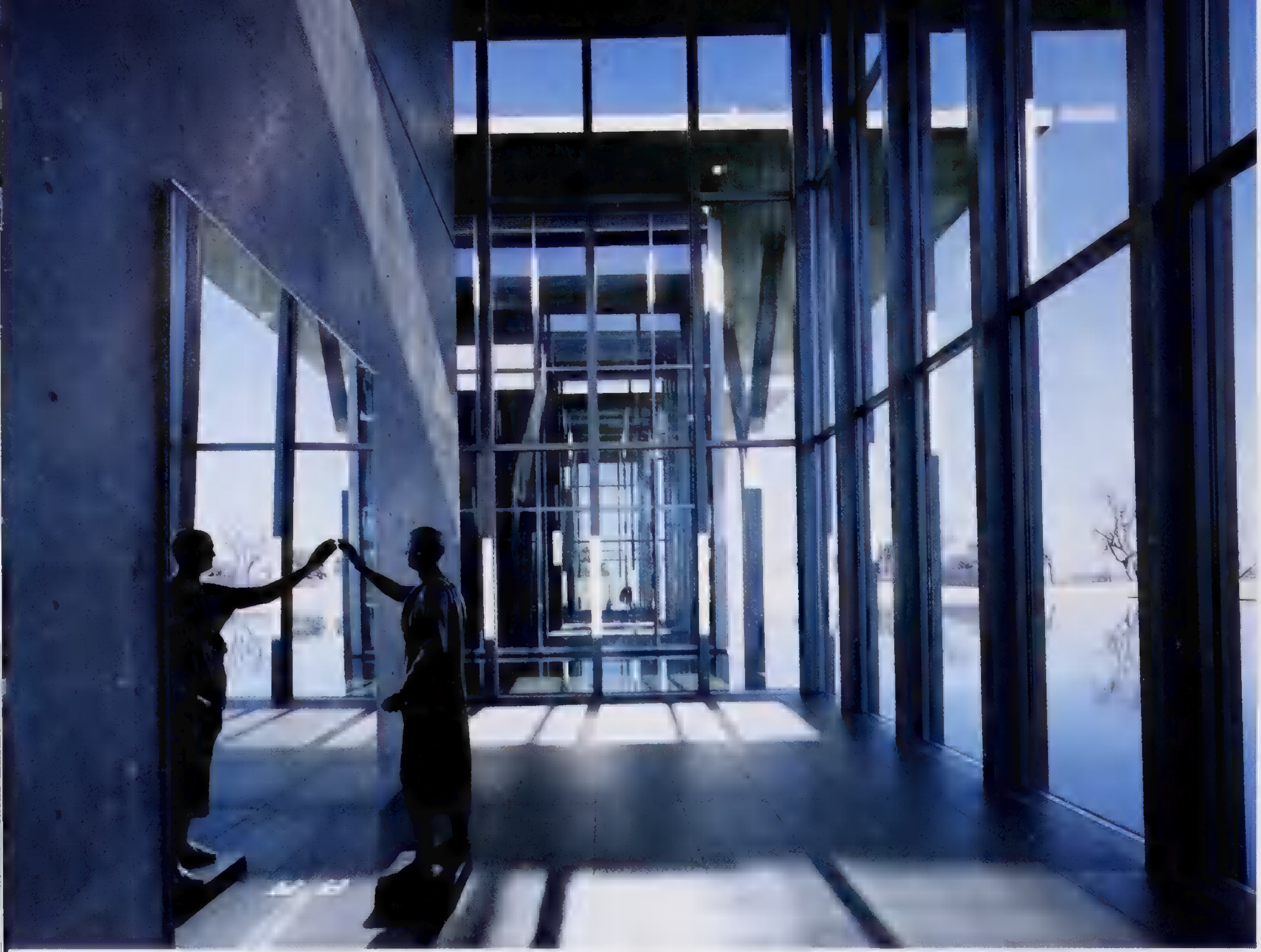
1. *Concrete*
2. *Aluminum louver panel*
3. *Insulated glass*
4. *Aluminum mullion*
5. *Precast concrete*
6. *Gravel*
7. *Stainless flashing*
8. *Concrete roof*
9. *Roof drain*
10. *Skylight*
11. *Aluminum louvers*
12. *GFRC tube*
13. *Clerestory window*
14. *Aluminum mullion*
15. *Fluorescent lamps*
16. *Unfinished concrete*
17. *Translucent fabric*
18. *White oak planks*

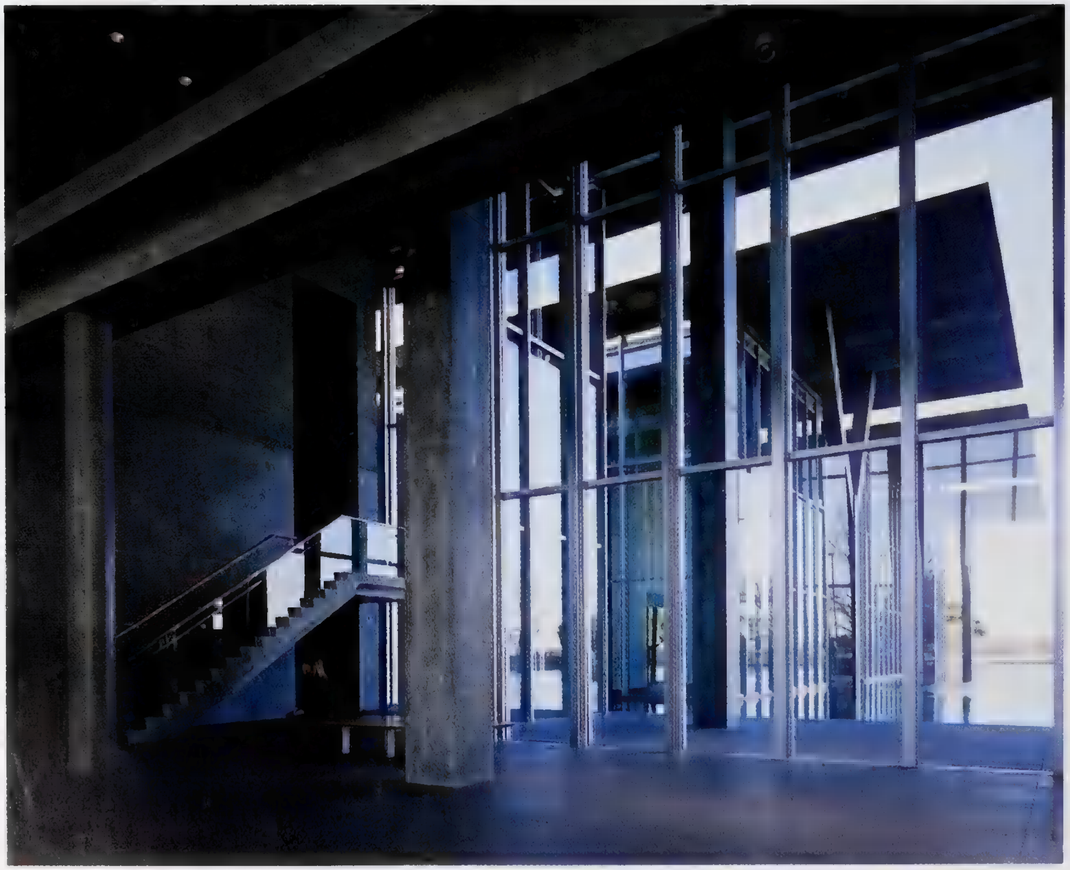


GALLERY PERSPECTIVE

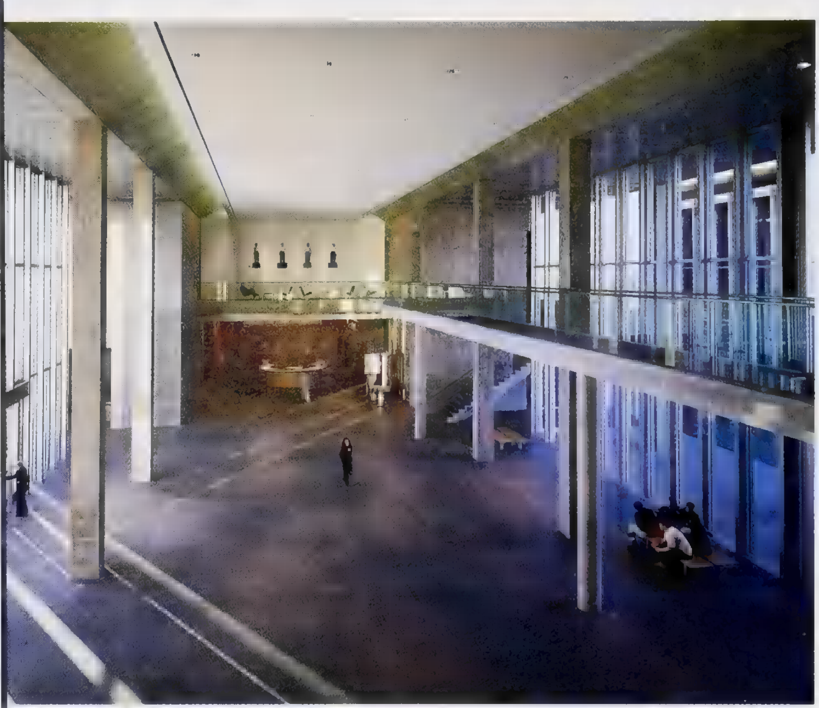
SECTION THROUGH GALLERIES

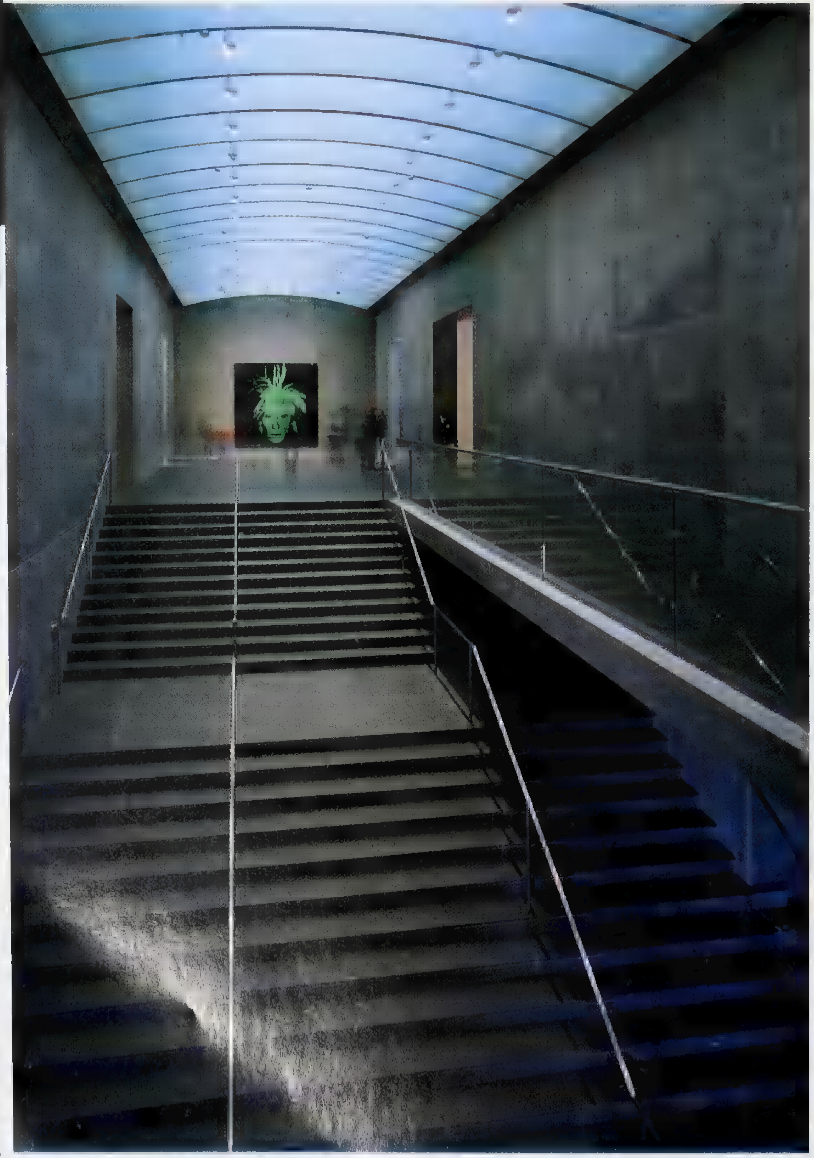
1. *Lobby*
2. *Grand stair*
3. *Gallery*
4. *Office*
5. *Classroom*

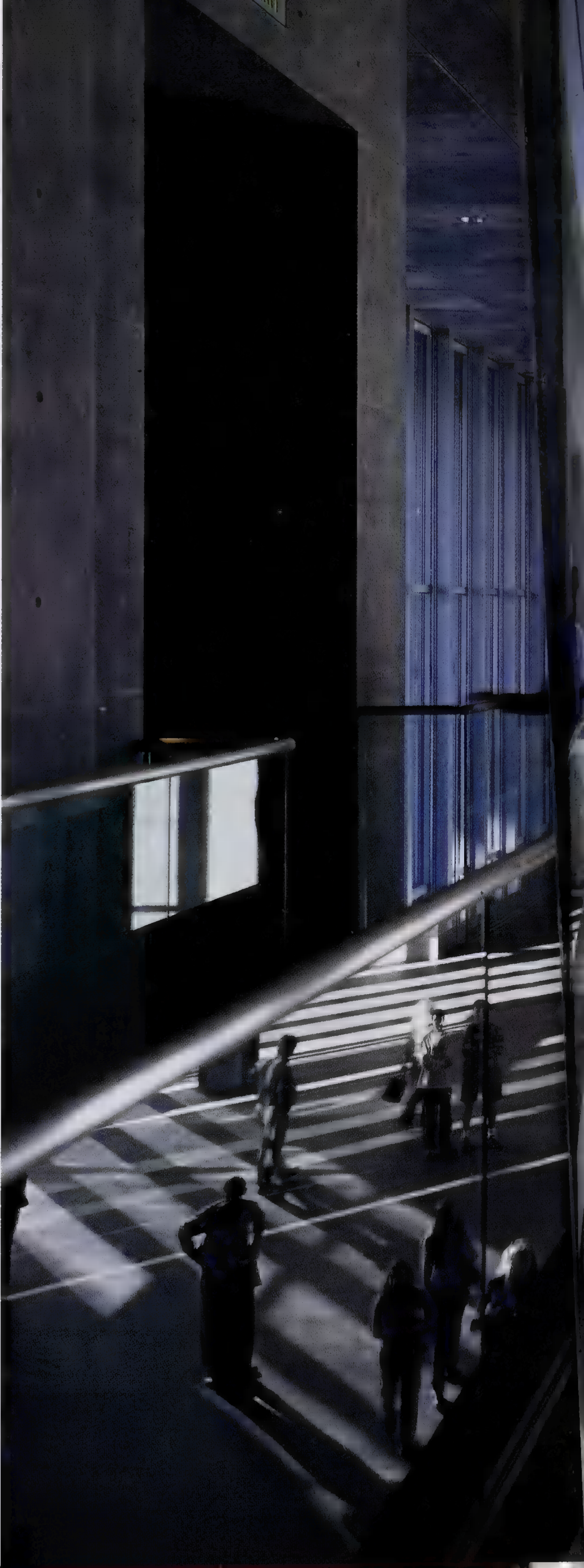


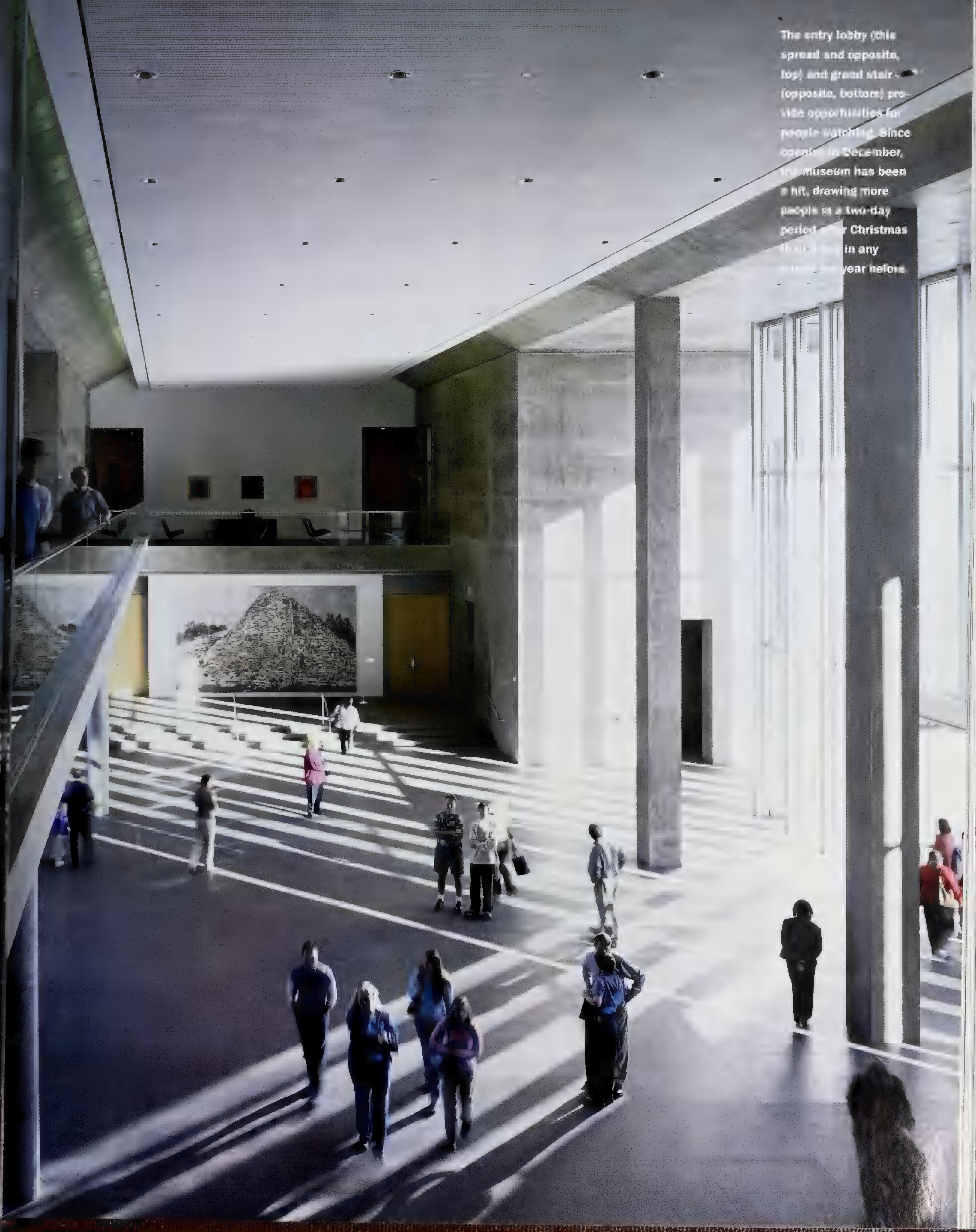


While some new museums have been criticized for not being sympathetic to art, Ando created remarkable spaces in the gallery pavilions (above, left, and opposite) that are kind to art as well as visitors.



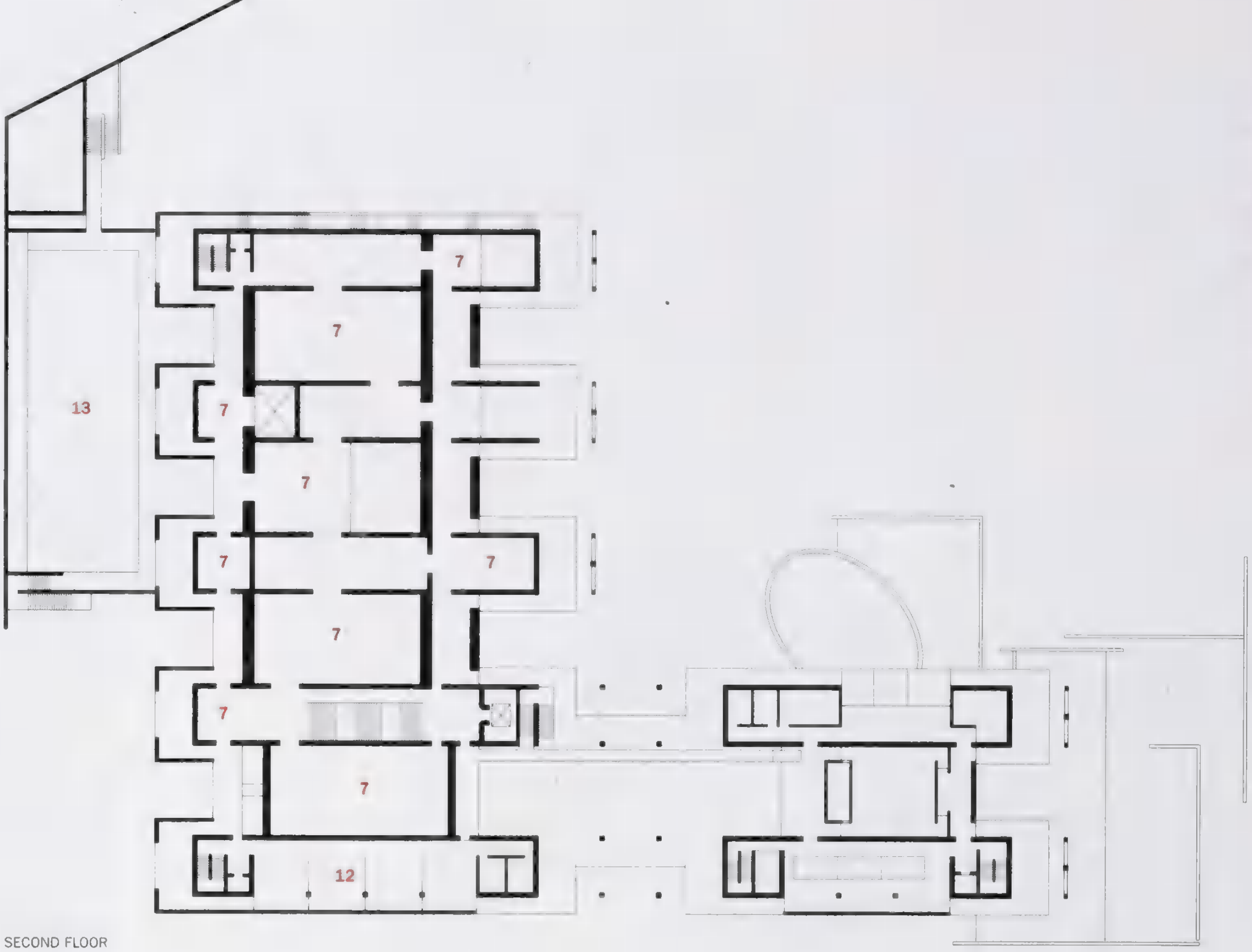




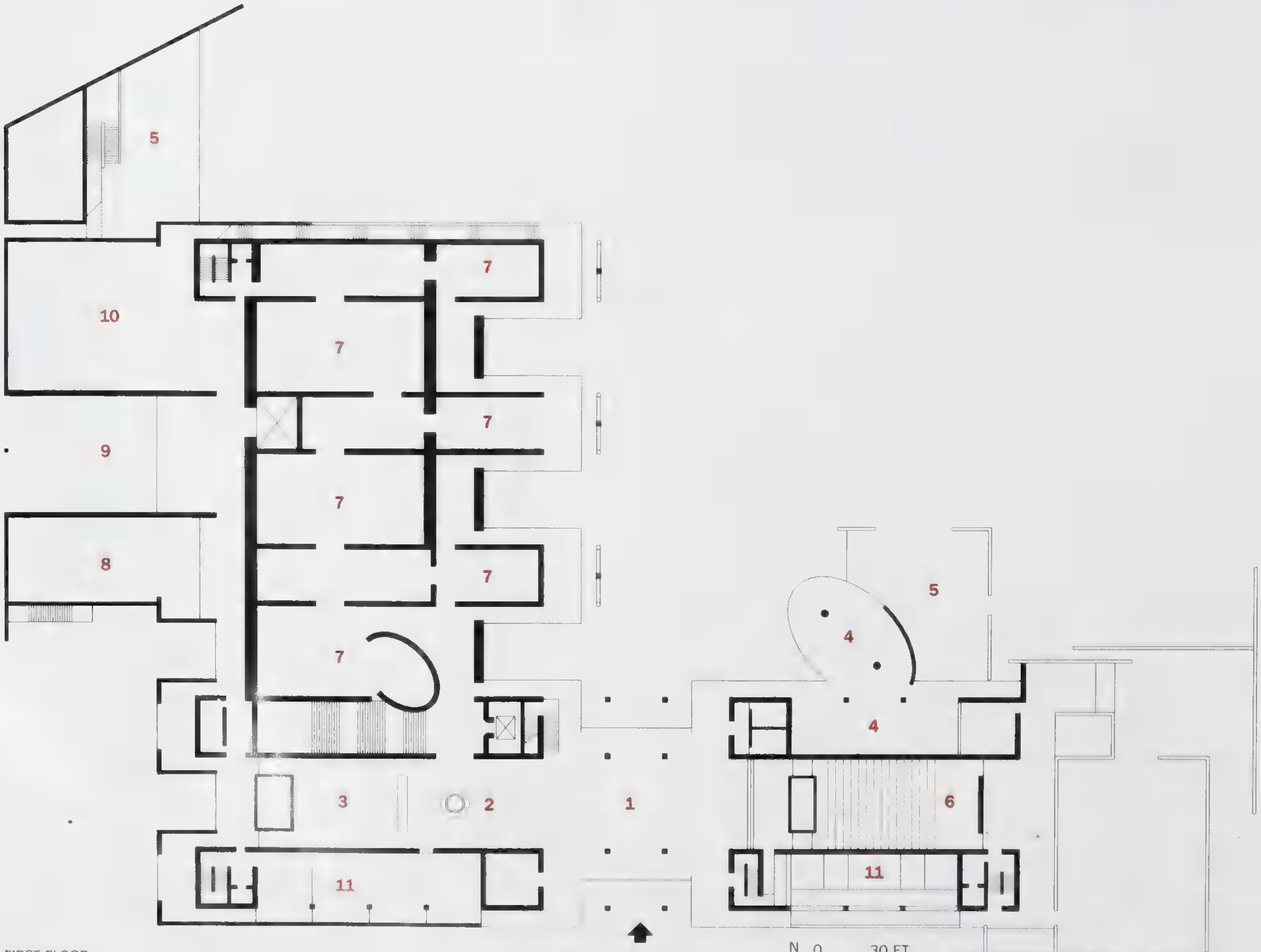


The entry lobby (this spread and opposite, top) and grand stair (opposite, bottom) provide opportunities for people watching. Since opening in December, the museum has been a hit, drawing more people in a two-day period after Christmas than [illegible] in any [illegible] year before.

The new, $65 millio building, four times e size of the museum old building, has 53,000 square feet gallery space. A sta case (opposite) uffe views to the water b also the chance to touch and appreciat the building's remar able concrete work.



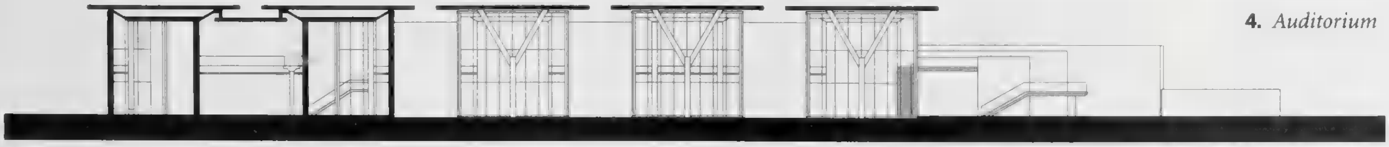
SECOND FLOOR



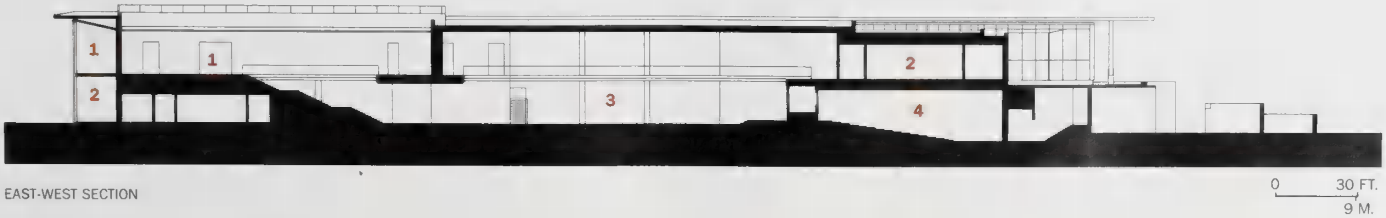
FIRST FLOOR

1. *Entrance hall*
2. *Information*
3. *Museum shop*
4. *Café/restaurant*
5. *Terrace*
6. *Auditorium*
7. *Gallery*
8. *Art workshop*
9. *Loading dock*
10. *Storage*
11. *Offices*
12. *Art classrooms*
13. *Sculpture terrace*

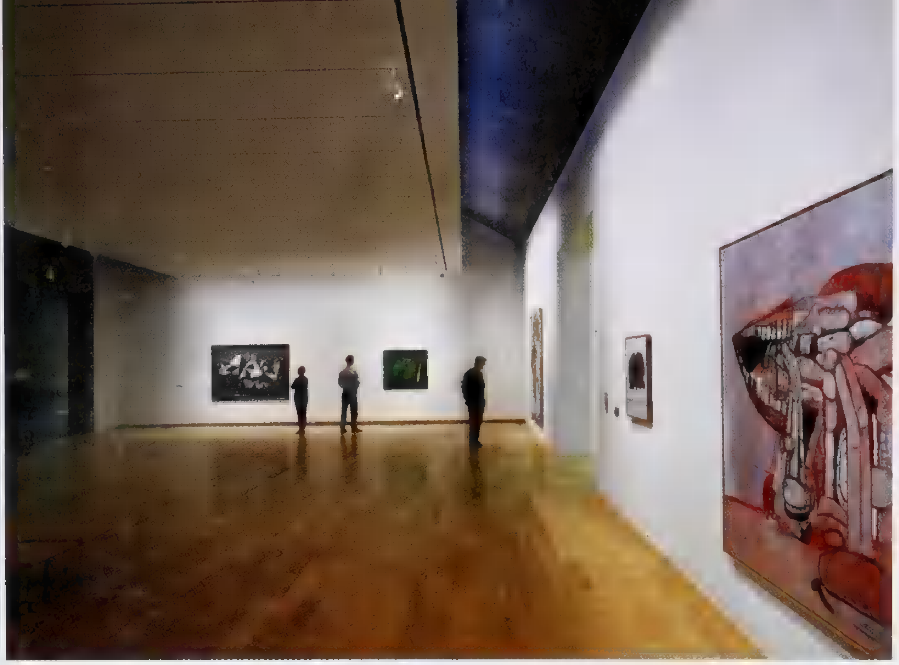
1. *Gallery*
2. *Office*
3. *Entrance hall*
4. *Auditorium*



NORTH-SOUTH SECTION



EAST-WEST SECTION



The museum's galleries were designed to accommodate large works of art and offer a range of settings, from self-contained spaces to ones that open onto big views of the garden and reflecting pool. Ando and consultant George Sexton designed a system of filters, louvers, and skylights that bring daylight into th galleries without damaging the art. Chief curator Michael Aupin chose to exhibit only 154 of the museum's 2,750 works of art, so there's room to appreciate them all. Anselm Kiefer's *Book with Wings* (opposite), for example, gets an elliptical space on the first floor all to itself.

below or above, it is Minimalist restraint raised to the power of 10.

A central stair rises from the first floor to galleries and classrooms above. Ando is a poet of vertical movement, and this impeccably crafted element evokes even grander versions at the Hyogo Children's Museum and the Chikatsu Asuka Historical Museum, in Osaka. We are meant to walk slowly and purposefully, noting the silky concrete walls and the wash of light from a vaulted ceiling reminiscent of those in the Kimbell. Ando's light, like Kahn's, has body and dimension: You could cut it with a knife.

Much has been written about Ando's admiration for Kahn, and the challenges he faced in building directly across the street from his hero's masterpiece. For Ando, the Kimbell is a summa of Modernist craftsmanship, after which architecture devolved into historical pastiche and empty irony. He makes a few obvious bows to Kahn—in the play of pavilions, the use of natural light, the integration of building and landscape—but his greatest tribute resides in the quality of the Modern's construction.

Ando said repeatedly at the opening that he hoped to rise to "the same level" as Kahn and "to create a link with a great work that is already present." The Modern is a combination of structural tours de force—the floating elliptical roof of the café, the dramatic Y columns supporting the pavilion cantilevers—and exquisite small refinements, such as the surgically precise reveals around signs and switch plates. Every square inch of concrete was hand-scraped and gently buffed; yet, unlike the overfinished concrete at Ando's 2002 Pulitzer Foundation for the Arts, in St. Louis, it retains the qualities of a natural material, including subtle shifts in color, tone, and texture.

Ando's one serious gaffe was turning the Modern's loading dock toward the Kimbell. The latter's dock is in a similar position but is smaller and lower and hidden by a wall and a planted berm. Most visitors don't even know it's there. What they see from the Kimbell, on the other hand, is the Modern's shipping, receiving, and trash collection. It makes for a clunky composition and, whatever the explanation, a surprisingly rude gesture.

In every other way, though, the Modern is a worthy neighbor and companion for the Kimbell, a blend of structural inventiveness and refined detailing that manages to honor its neighbor without mimicking it. ■

Sources

Anodized aluminum and glass curtain wall: *Masonry Arts*

Anodized aluminum wall panels: *A. Zahner Company*

Low-e laminated glass: *Interpane*

Skylights: *Supersky*

Acoustical ceiling: *Armstrong*

White oak lobby desks: *Techniques*

Black granite pavers: *Lucia*

White oak flooring: *Flooring Assocs.*

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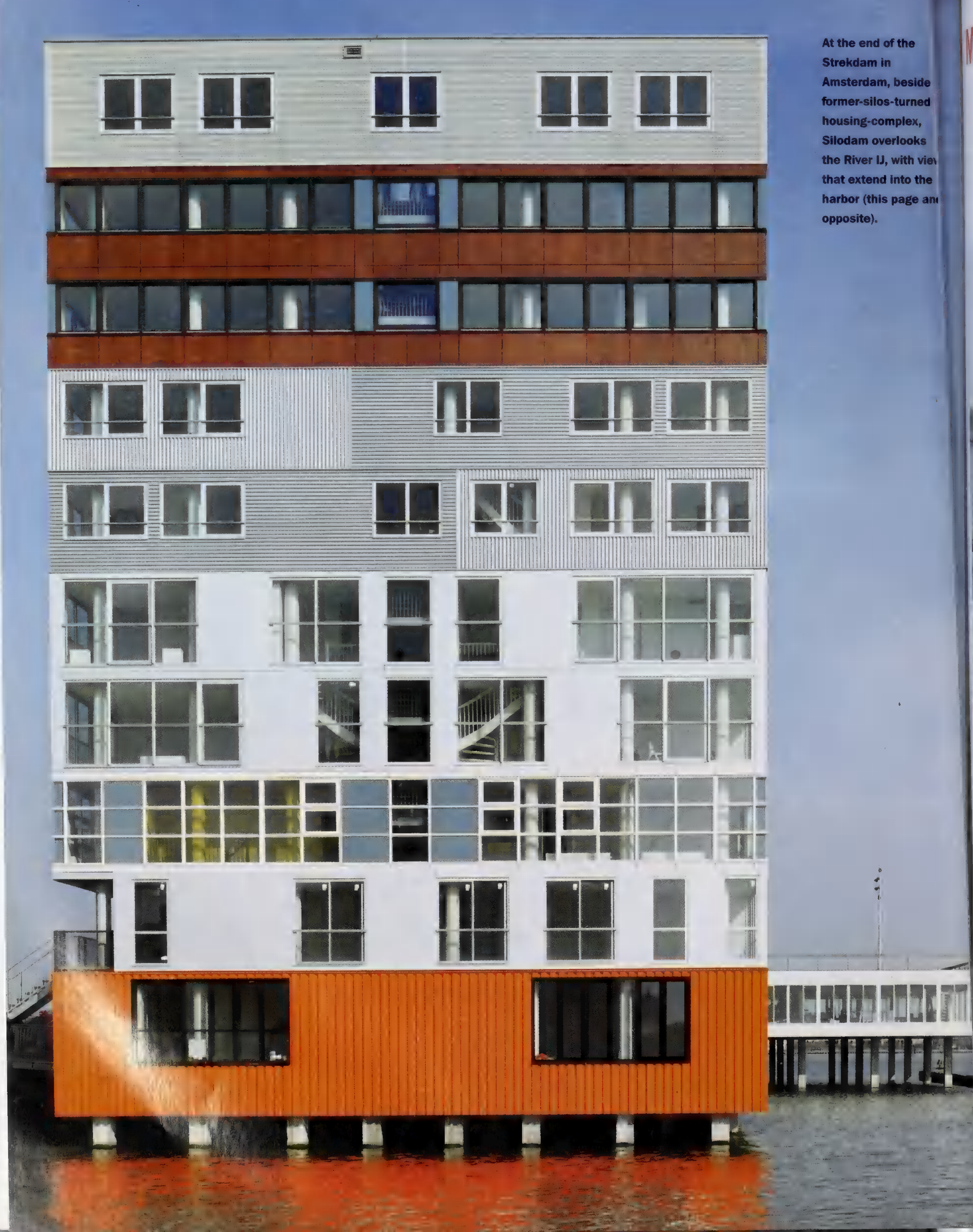
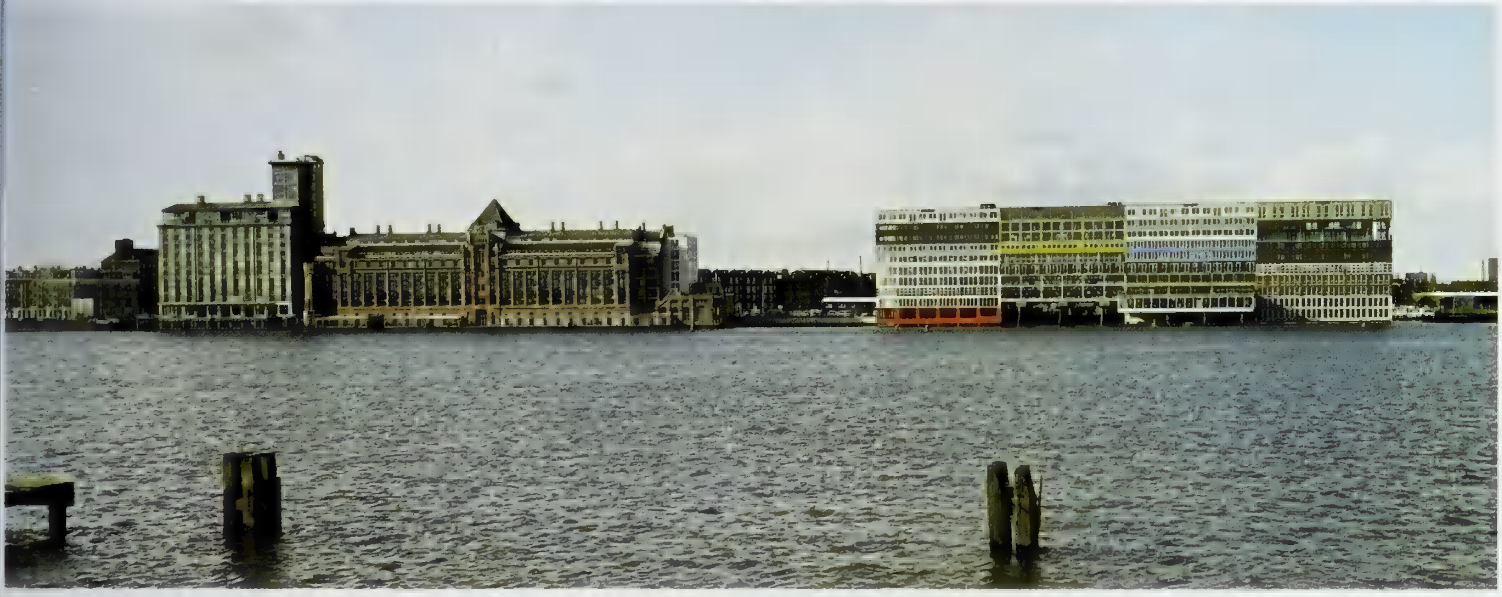


At the end of the Strekdam in Amsterdam, beside former-silos-turned housing-complex, Silodam overlooks the River IJ, with vie that extend into the harbor (this page an opposite).

MVRDV created SILODAM, colorful waterfront housing built at the end of a wharf near the former silos for which it is named



By Tracy Metz

For a city famed for the tall, thin patrician houses along its canals, Amsterdam has been surprisingly slow to discover the charms of waterfront living along the sea arm of the IJ that forms the city's northern edge. Admittedly, this is a more rugged, industrial environment than the ultraprotected, 17th-century city center, but every true urbanite can sense its potential.

The first building to realize that potential is Silodam, a large housing complex of 157 apartments on the water in the former harbor area to the west of town. Moreover, this building, fruit of a 1994 competition, marks the first large housing complex designed by the Rotterdam-based firm of MVRDV.

The building gets its name from its neighbors, a 19th-century-brick and a 20th-century-concrete silo (now also converted into housing), constructed along a dam projecting obliquely into the water of the IJ and serving as a breakwater for the residential area landside. The MVRDV building differs from the neighboring silos in that it is not squarely on the dam, but stands 20 feet to one side; that is, it is not just on the waterfront, but actually in the water.

On the outside, Silodam's robust proportions stand out dramatically—about 400 feet long, 65 feet deep, and 10 stories high. The materials of the facade, rough-and-tumble to the point of looking slapdash, call to mind stacked shipping containers. These variations in the facade are also functional, dividing the building's large mass into distinct neighborhoods comprising four to eight apartments of the same type. These groupings can be recognized on the inside by the color of the hallways, where the blank hotel-like doors, floor mats, and ceilings are included in the color scheme, varying from powder blue to red to yellow-green and cobalt blue.

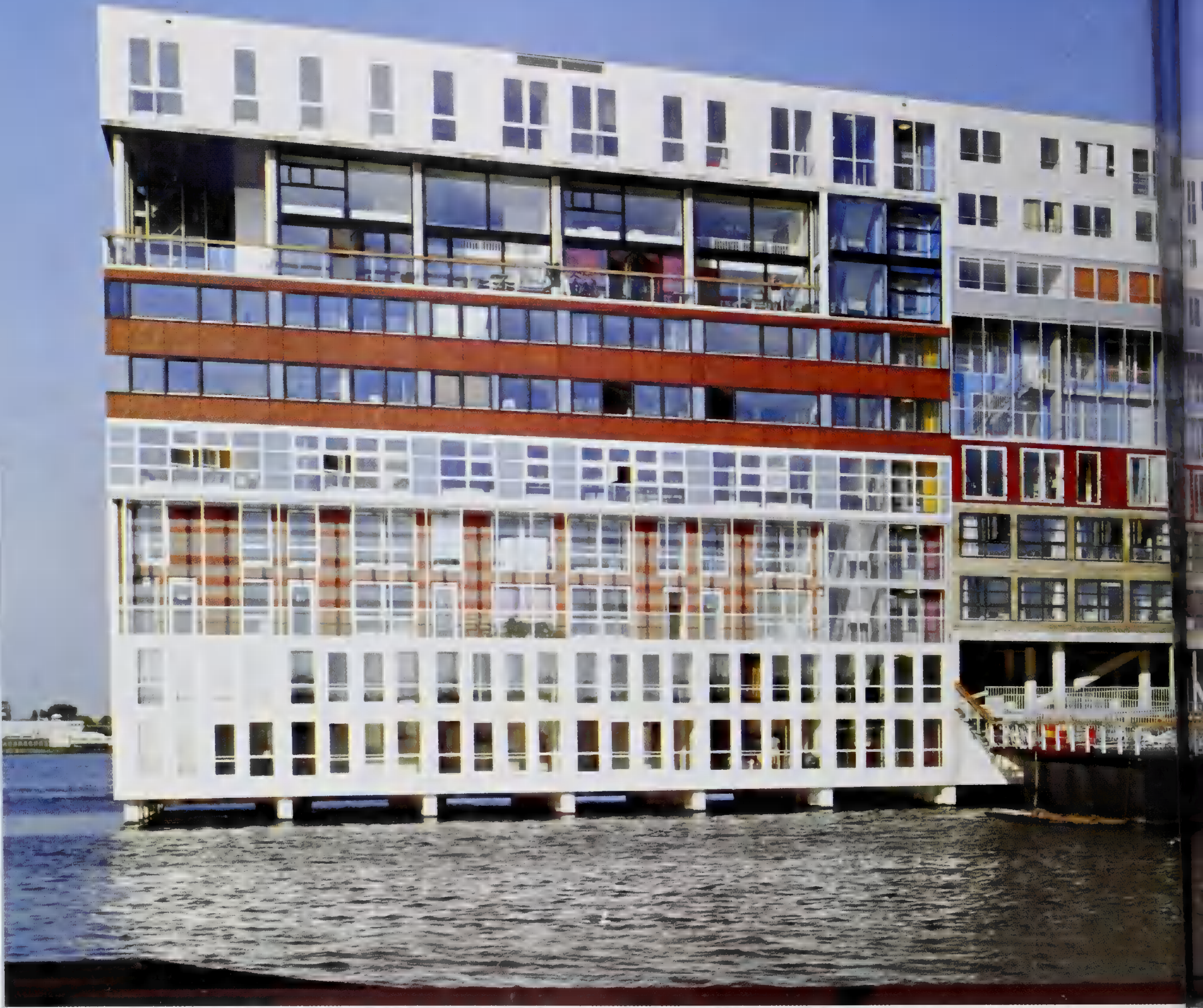
The largest neighborhood within the complex is a section of 10 apartments for a group of adults over 50. While the individual apartments are no different from others, the architect was asked to take this arrangement into consideration in the design of the section, and one of the units is used communally and as a guest house. The hallway on the eighth floor is the only one to run without height differences the full length of the building, like an artery.

Monolithic though the building may look on the outside, inside it is intricate and ingenious, with floor plans that fit together like the pieces of a jigsaw puzzle. Much effort has been made to exploit the views on both sides, and the daylight is bountiful. The four sections of this big box contain an extraordinary variety of housing types, sizes, and prices, while at the same time managing to accommodate the government-prescribed 30 percent low- and middle-income housing. No wonder project architect Nathalie de Vries calls the building an upright village.

The apartments vary in all three dimensions: in width, from 20 to

Tracy Metz is RECORD*'s correspondent in Amsterdam and the author of the book* Fun! Leisure and Landscape, *released in September 2002 by NAi Publishers.*

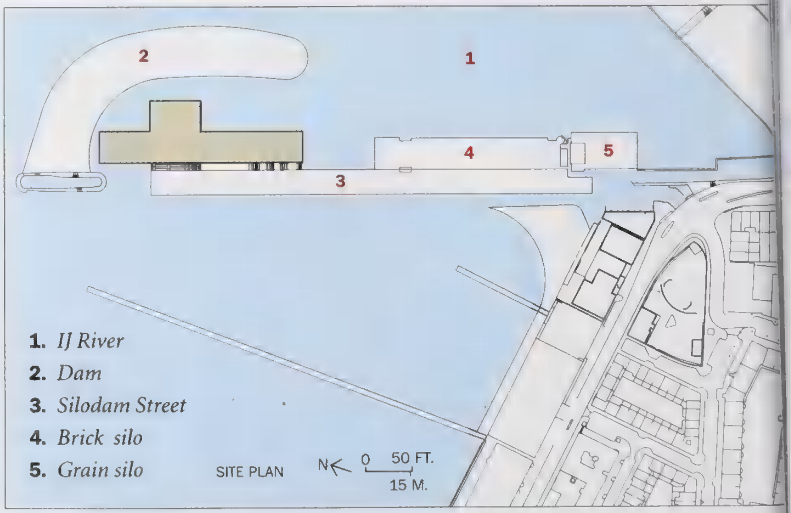
Project: *Silodam, Amsterdam, the Netherlands*
Client: *Rabo Vastgoed; De Principaal*
Architect: *MVRDV—Winy Maas, Jacob van Rijs, Nathalie de Vries, principals*
Engineer: *Pieters Bouwtechniek*
Consultants: *Cauberg Huygen (acoustical)*
General contractor: *Bouwcombinatie Graansilo's vof, Amsterdam*



50 feet; in depth, from the full 65 feet, affording views both of the water and of the city, to half that; and in height, from standard to double-height atria, with floor-to-ceiling picture windows, to triple-height lofts. There are even so-called X apartments that are staggered diagonally through the building, with, for example, living rooms and kitchens on one floor facing the water of the IJ, and the bed, bath, and study on the floor above, facing the city. All apartments have a glazed loggia; in one neighborhood the loggia has grown to a two-story glass facade, creating an interior street as a communal space.

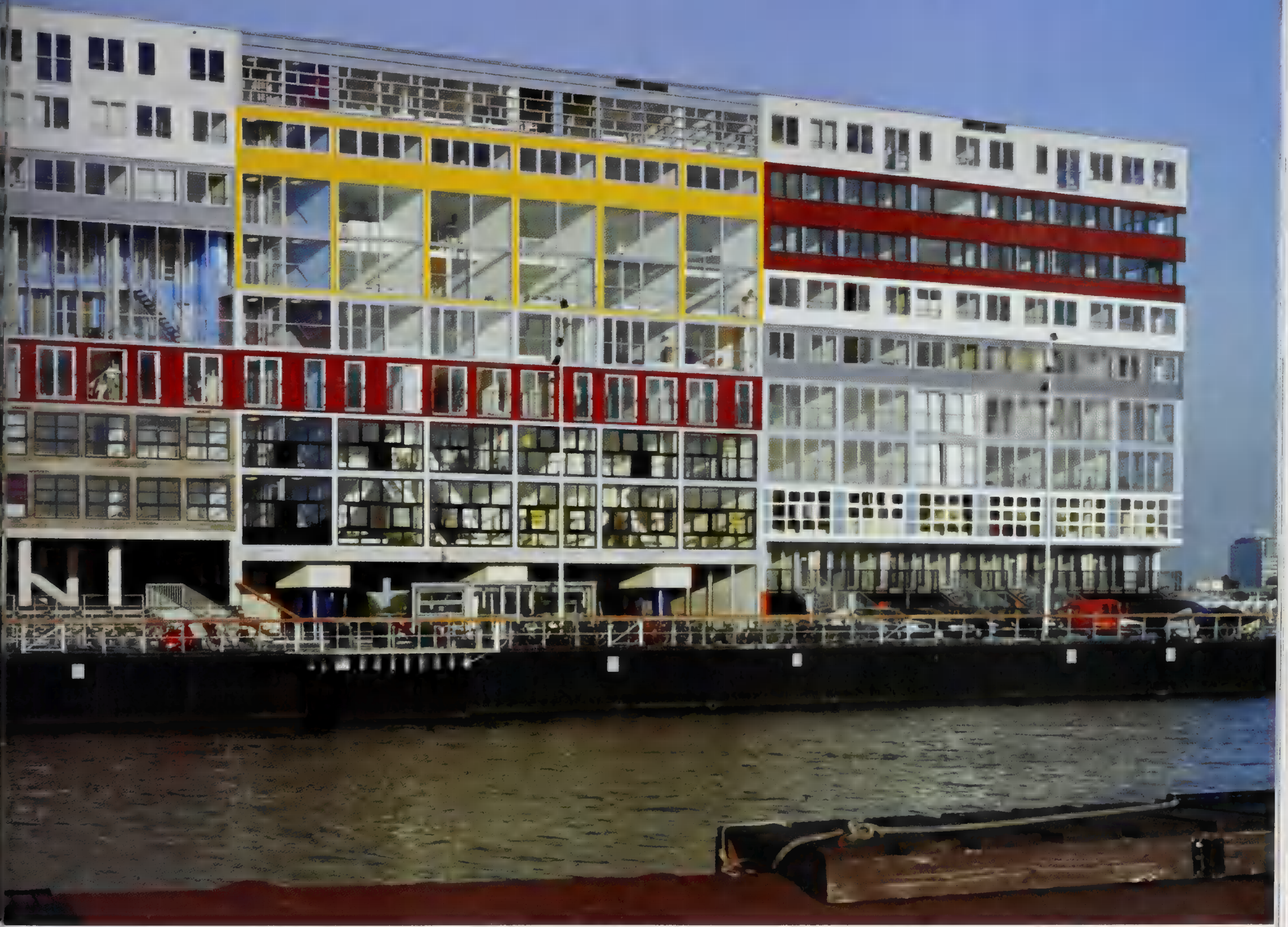
In an apartment for a household of two people, one of whom has a design practice at home, the front door, kitchen, and dining area, as well as a living room, are on the seventh-floor mezzanine level, with a view out over the water. A staircase leads to the eighth floor, where the bedroom and office have a view over the city.

On the top floor, one of the penthouses (with views in all directions) contains a glazed roof terrace—situated like a regular room but open to the sky, with a wooden deck—between the living room and the



1. *IJ River*
2. *Dam*
3. *Silodam Street*
4. *Brick silo*
5. *Grain silo*

SITE PLAN



Silodam's colorful, variegated facade stands out dramatically over the River IJ. The rough-and-tumble exterior materials of the large complex call to mind stacked shipping containers.

kitchen. A corner apartment offers a combined living room and kitchen, with an enclosed balcony that also functions as a hallway facing the water and leading to the bedroom.

In the glazed loggias, the architects were unable to solve the problem of making the windows fully operable without their getting in the way as you walk by, and it is apparent from the various kinds of furniture that people put there—varying from upright dinner-table chairs to plastic garden chairs—that most people aren't quite sure whether these loggias qualify as inside or outside spaces.

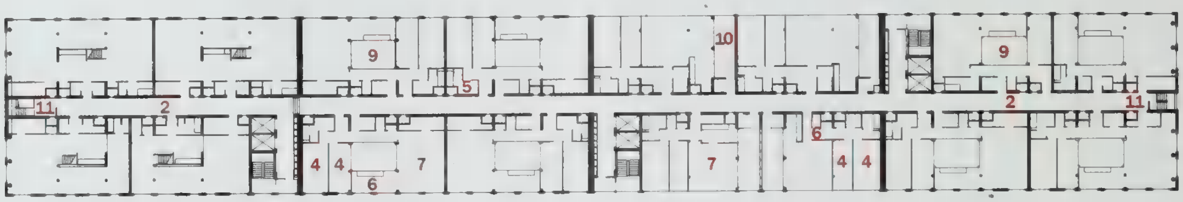
Another couple, a designer and an architect, grouped the entrance, kitchen, bedroom, and bath on one floor, and in the double-height space beneath, ranged around two very large slanting structural columns, positioned the living space, an office and, hidden behind mobile cupboards, a guest bed. If you leave by the door on this lower floor (the residents prefer to use the hallway for storage space), you find yourself on a wooden deck looking between the slats to the sloshing water of the covered marina below the building.

Silodam marks an interesting transition from the traditionally mass-oriented Dutch approach to housing toward more freedom for owners. All parties involved—the architects, the municipality, the commissioning housing corporation, and not least the new inhabitants—wanted the building to function as a large envelope offering the greatest possible diversity in floor plans and therefore in lifestyles.

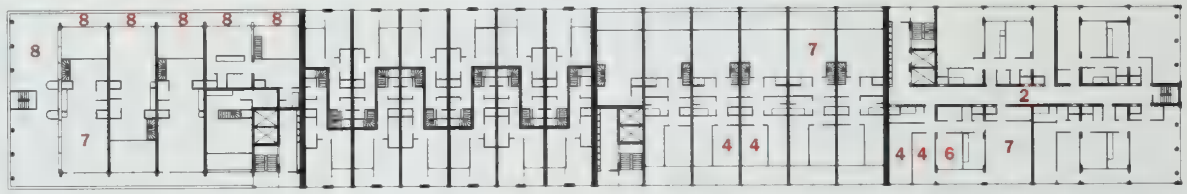
VARIATIONS IN THE FACADE ARE FUNCTIONAL, DIVIDING THE BUILDING INTO DISTINCT NEIGHBORHOODS.

Given the strict housing regulations in Holland, this was no easy task. Each detail had to be completely worked out beforehand. Thereafter, the new owners could change their space in consultation with the contractor, who was more amenable than most to buyers' wishes. The

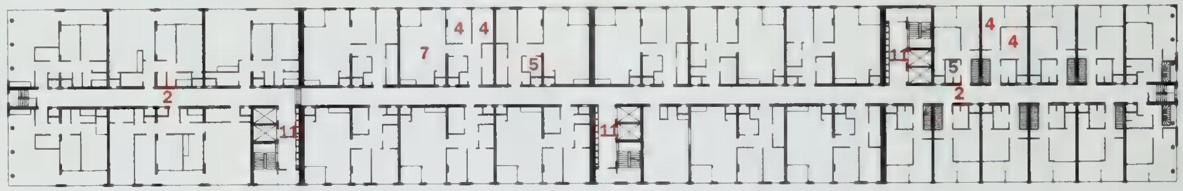
Silodam is not squarely on the dam, but stands 20 feet to one side; it is not just on the waterfront, but actually in the water (opposite, top right). The building is divided into distinct neighborhoods, which are reflected in the irregular facade. Boardwalklike raised wooden sidewalks set the structure apart from the street (opposite, bottom), and a small marina with two landing piers under the building provides seafaring opportunities for the residents (opposite, top left).



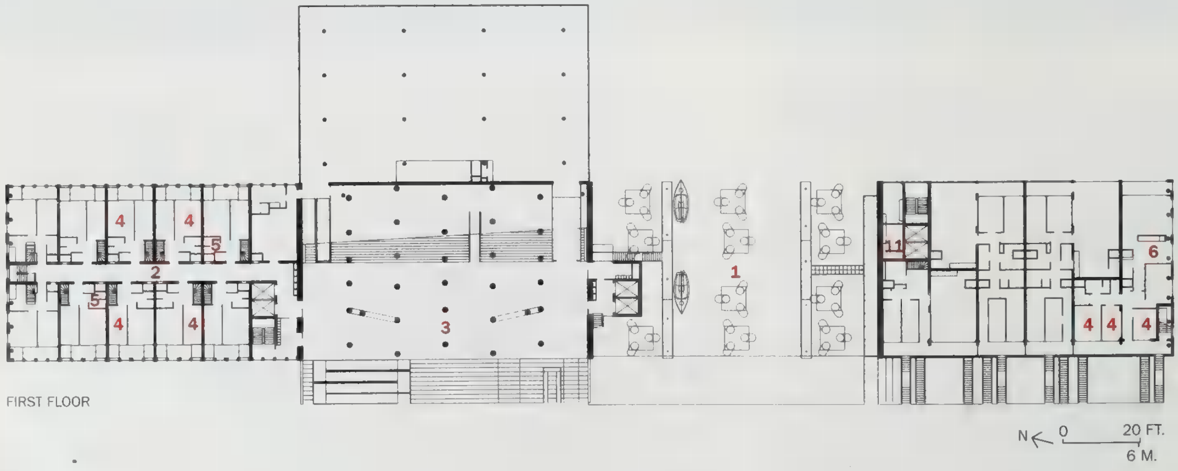
NINTH FLOOR



EIGHTH FLOOR



FOURTH FLOOR



FIRST FLOOR

1. *Harbor*
2. *Corridor*
3. *Entrance hall*
4. *Bedroom*
5. *Bathroom*
6. *Kitchen*
7. *Living room*
8. *Balconies*
9. *Patio*
10. *Garden*
11. *Vertical transport*

building represents a transitional moment in Holland's approach to housing; it is an ode to the broadest possible social and architectural variety, representing a shift toward the interests of the home buyer.

The social composition of Silodam was also influenced by another trend: Between the competition and completion, a period of almost eight years, the housing prices in Amsterdam shot up, making the building more of a "yuppie bunker," as the Amsterdammers call it, than it was intended to be. Next time, says Nathalie de Vries, she will push the envelope even further and offer buyers an "intelligent casco," or shell, in which much less is predetermined.

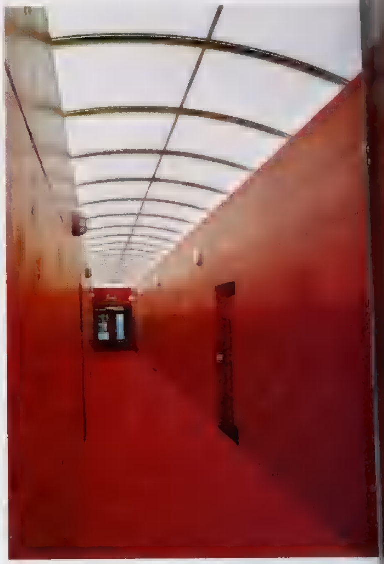
Along with the variation in housing types, De Vries's agenda incorporated public space into what otherwise remains a relatively monofunctional apartment building. "This is inevitable, in a time when there is less and less space to build but more and more people want to live spaciously," she says.

ONE OCCUPANT APPLAUDS THE COMINGS AND GOINGS OF THE BIG CRUISE SHIPS AS THEY SAIL SLOWLY AND MAJESTICALLY BY.

Boardwalklike raised wooden sidewalks set the structure slightly apart from the street. An open entrance hall with wooden stairs over the full breadth of one of the four sections provides access to the dwellings, and in nice weather the stairs function as a podium where people sit on the steps, chat with the neighbors, and enjoy the view.

Not only inhabitants but also passersby can walk right through the building onto a large, unfurnished wooden deck to enjoy the view over the water. (To the relief of the inhabitants and the architect, it is apparently too cold and windy here for junkies and homeless people). A

The apartments vary in all three dimensions, affording views both of the water and of the city, and many feature floor-to-ceiling picture windows. The color of the hallways ranges from powder blue to red to yellow-green and cobalt blue.



generous space intended for a restaurant or a gym rests under this so-called balcony, but there are no takers so far. A small marina with two landing piers under the wooden stairs provides seafaring opportunities for the residents.

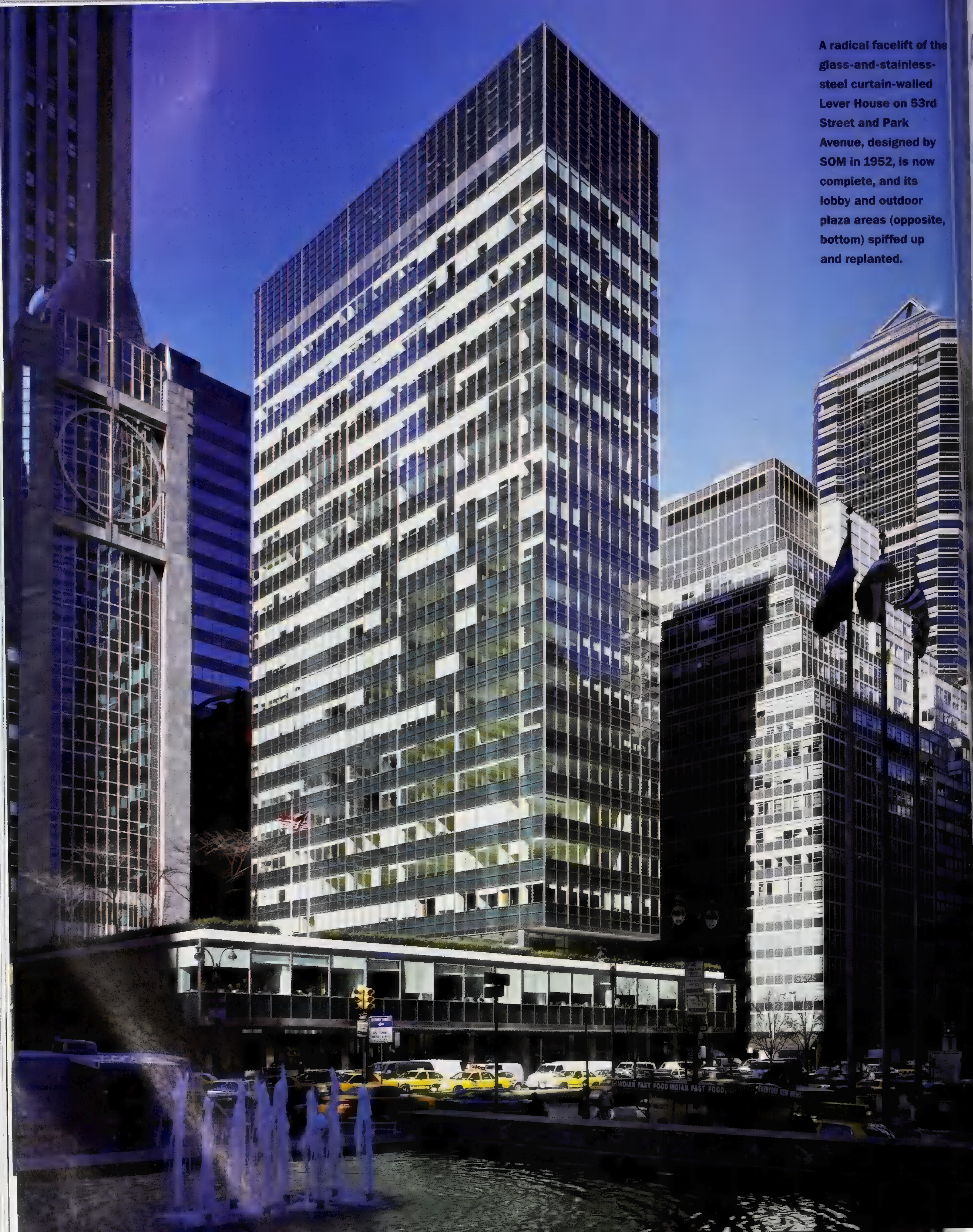
De Vries would have liked to take this concept much further and offer the inhabitants of Silodam more communal facilities: a guest room, perhaps, or medical help for the elderly, or a pool, or even simple things like a laundry room. Originally the design included a large rectangular opening near the top of the building that could be used as a communal space or a day-care center.

THE BUILDING IS INTRICATE AND INGENIOUS, WITH FLOOR PLANS THAT FIT TOGETHER LIKE THE PIECES OF A PUZZLE.

In front of the building, sunk into the dam, is a vertical parking structure designed specially for tight spaces, which can also be found along Amsterdam's 17th-century canals. At street level, all you see is a simple shed; you drive your car in and onto a platform, then use your resident's code to activate the hydraulic mechanism that lowers your car into a subterranean multilevel stack of cars on platforms at very close quarters. To retrieve your car, you punch in your code, the platforms revolve underground, and your car rises into the shed.

For financial reasons—and also, perhaps, for fear that in a building that is an ode to modern-day individualistic urban life there would not be sufficient communal spirit to use and maintain the space—the complex was largely filled with apartments. A remnant of the original plan survived in the form of what occupants call the "crow's nest," a double-height opening at the outer western edge on the tenth floor. One of the occupants keeps tabs via Internet on the comings and goings of the big cruise ships on their way to and from the passenger terminal farther east, and brings friends and a bottle of wine to the crow's nest to applaud as the boats sail slowly and majestically by. ■

WWW For more information on the people involved in this project, go to Projects at **architecturalrecord.com**.



A radical facelift of the glass-and-stainless-steel curtain-walled Lever House on 53rd Street and Park Avenue, designed by SOM in 1952, is now complete, and its lobby and outdoor plaza areas (opposite, bottom) spiffed up and replanted.

ANALYSIS The restoration of New York City's **LEVER HOUSE** is not so same-old same-old, as architects **SOM** and William T. **Georgis** demonstrate

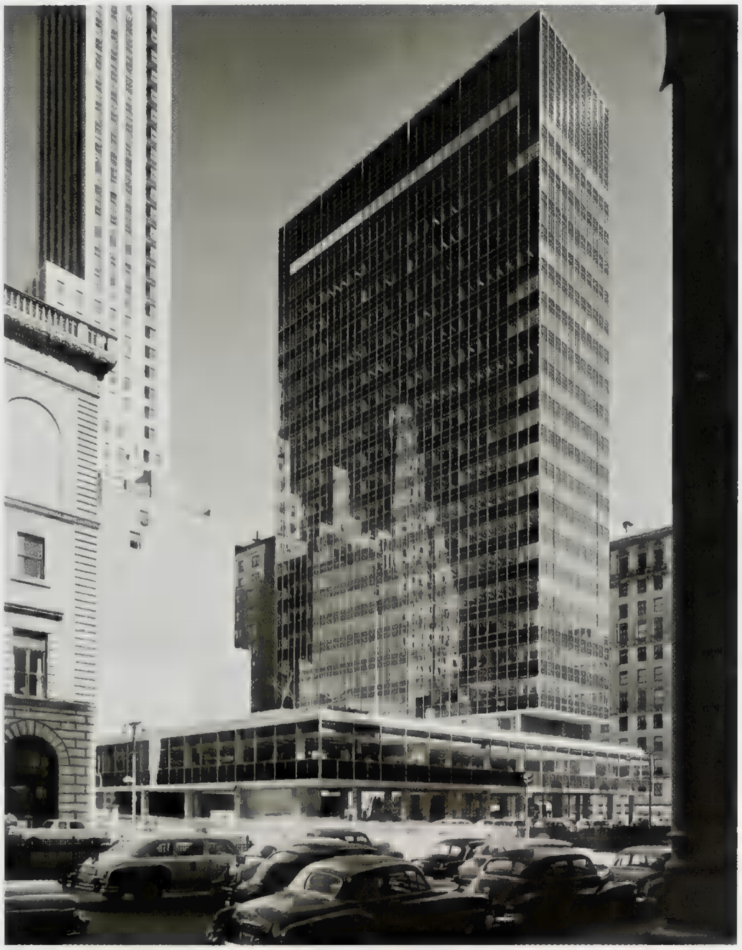
By Suzanne Stephens

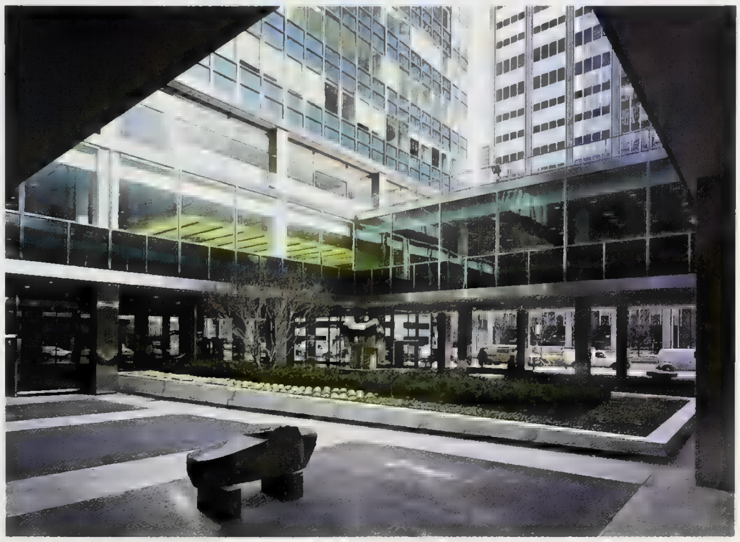
"Authenticity" has come to be the operative term for describing all sorts of preservation efforts. Yet its meaning remains elusive, largely due to changes in the technology of restoration and adaptive reuse. With the recent renovation of New York's Lever House, which involved a radical facelift for its famous glass and stainless-steel curtain wall, the issue surfaced once again. Is the wholesale substitution of the original skin with a new and improved version legitimate, no matter how close the final result comes to the original appearance? The glass is green-tinted and single-paned, as in the original, but now it is heat-strengthened instead of annealed. And while parts of the underlying curtain-wall structure of carbon steel have been kept—just scraped of rust and recoated—a new aluminum receiver system supplements the old. Nevertheless, Wayne Curtis, in *Preservation* magazine (September-October 2002), wondered if it were not like replacing a deteriorating stucco wall of a Baroque church with Dryvit.

The debate turns on whether or not we should judge the authenticity of the methods to restore Modern buildings by the same criteria we use for restoring, say, age-old churches crafted by stonemasons. The issue is vexing, since it is only recently that Modern buildings began to be considered qualified for landmark designation. Indeed, Lever House, designed by Skidmore, Owings & Merrill's (SOM) Gordon Bunshaft and completed in 1952, was one of the first of the crop of Modernist buildings to be "saved." New York's Landmark Preservation Commission (LPC) designated the 31-year-old building as a historic landmark in 1983 after it had been threatened by the Fisher Brothers, developers who bought the lease and then produced plans to demolish the 24-story structure. Jackie Onassis and Philip Johnson managed to rally the troops to fight for landmarking, drawing architects to their cause who had previously dismissed preservationists as a bunch of blue-haired ladies in tennis shoes.

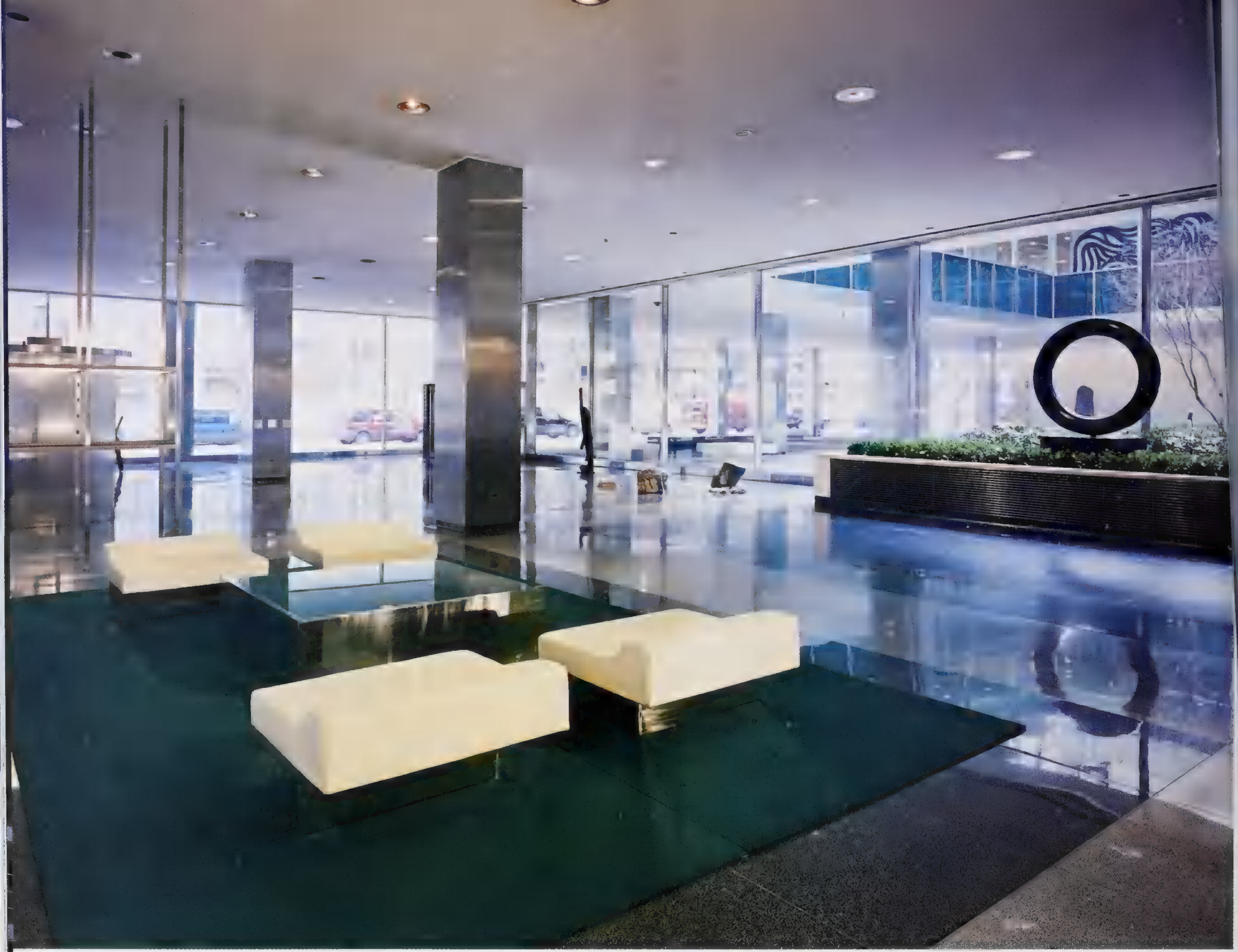
A place in skyscraper history

Although short by skyscraper standards, Lever House was the first corporate office building in the International Style idiom to go up in New





Project: *Lever House curtain-wall replacement and restoration*
Owner: *RFR Holding*
Exterior wall consultant, engineer of record: *Gordon H. Smith, P.E.*
Architectural design consultant: *Skidmore, Owings & Merrill—David Childs, FAIA, senior design partner; T.J. Gottesdiener, AIA, managing partner; Carl Galioto, AIA, technical partner*
Interior architect, lobby renovation: *William T. Georgis, Architect—William T. Georgis, AIA, principal*
Landscape architect: *Ken Smith*



William T. Georgis, architect in charge of the interior renovation, designed white leather and stainless-steel chairs and a steel and glass table on a wool rug for the lobby (above). His concierge desk of walnut and stainless steel is larger than the original desk by Raymond Loewy (above), removed long ago. Noguchi sculptures on temporary loan are now installed in the lobby and the outdoor plaza spaces.

York City. Granted, Philip Goodwin and Edward Durell Stone's Museum of Modern Art preceded it in 1939, and Wallace Harrison and his team's United Nations Secretariat went up in 1950, but here was a totally wrapped-in-glass office building, erected by a soap company as a symbol of hygienic modernity. The client, Charles Luckman, was perfect: He had been trained as an architect before becoming head of Lever Brothers.

By incorporating a plaza at the ground level, partially covered with a one-story-high horizontal slab resting on columns, and by taking advantage of a little-used zoning provision that allowed the office tower to go straight up to any height as long as it only occupied 25 percent of the site, the Lever House was a distinctly different urban form. It thrust forward an alternative to Manhattan's conventional wedding-cake silhouette resulting from the 1916 zoning code. With its skinny (8,700-square-foot) floor plates and mid-rise height, the building provided a density only eight times the size of the site. But Lever Brothers didn't care about added rent from the unbuilt floor space or ground-level shops.

The let-there-be-light-and-air credo of Lever House was to be famously embodied in 1958 by Mies van der Rohe's Seagram Building, sited catercorner across Park Avenue. By 1961, zoning would be changed to encourage more such tower-with-plaza options—and soon the rest of the city followed, although not so successfully.

A new player arrives on the scene

Regardless of its historic significance, Lever House showed the wear and tear of its years. It became clear that the curtain-wall technology of 1952 was not holding up (see sidebar). After Lever Brothers, now Unilever, left Manhattan for Greenwich, Connecticut, in 1998, RFR Holding appeared as the new owner of a 99-year-lease on the building and its air rights. Although the LPC had already approved SOM's drawings for a renovation submitted by Unilever in 1996, RFR promised a sensitive restoration. It hired engineer Gordon H. Smith to do the actual curtain wall, with SOM as design consultants. (The HVAC system did not need overhauling, although RFR undertook specific modifications where needed.)

RFR then put a young architect, William T. Georgis, in charge of the restoration and redesign of the lobby and elevator cabs and had him coordinate the design efforts for the outdoor and indoor public areas. Georgis, who has worked with RFR and two of its principals, Aby Rosen and Michael Fuchs, on a number of interior commissions, such as building lobbies and private residences, wanted to retain the 1950s aura of the original spaces without resorting to "slavish reconstruction." The lobby furnishings designed by Raymond Loewy were long gone, and there were only photographs, but no drawings, available. (Loewy's sumptuous Modern offices for the top brass still exist on the 21st floor, a perfect time

A MIDDLE-AGED MODERNIST ICON IS REJUVENATED WITH A NEW SKIN

When Lever House was designed 50 years ago by Gordon Bunshaft, of Skidmore, Owings & Merrill (SOM), curtain-wall technology was in its infancy. The glass envelope remains exquisitely detailed, even in light of several decades of advancements, but its performance was eventually undermined by 1950s' technology.

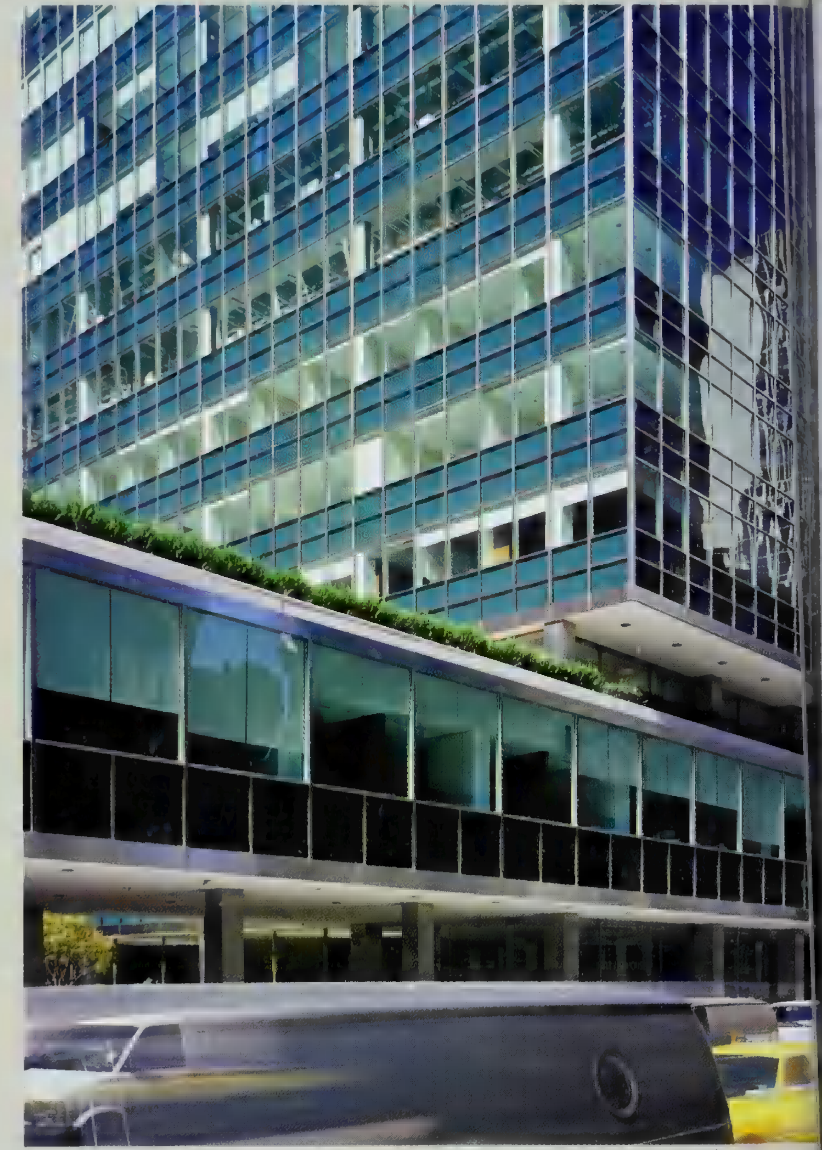
If a soap manufacturer wants to project an image of cleanliness, then architectural transparency is one way to express it. In an otherwise bland review, *Engineering News Record* (May 1, 1952) quoted the architects as making cost-saving claims, as well, for the hermetically sealed envelope. They argued that operable windows were more expensive to install, and that fixed glazing reduces the frequency of interior cleaning by keeping out dirt and grime, of which there was a lot more in the air in 1950.

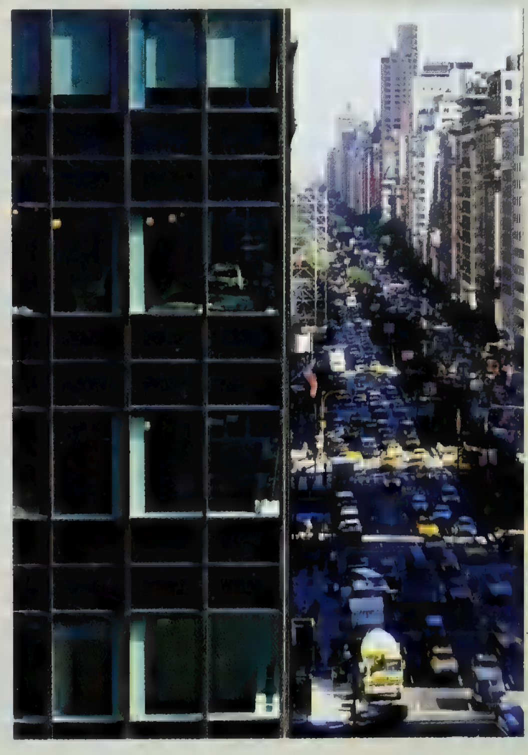
Fixed glazing also reduced the costs of heating and air-conditioning. Although certainly not up to today's standards, the light green tint of the glass did indeed reduce by half the heat gain (solar heat gain coefficient of 0.60) allowed by typical clear glass. Developed by the Pittsburgh Plate Glass Company (now called PPG Industries) in 1934, the innovative Solex glass also reduced interior brightness (visible light transmission of 77 percent) and, as a result, made it practical to design buildings with huge expanses of glass. Because tinted glass was produced in limited quantities until after World War II, reportedly not until Lever House was completed in 1952 was such glass used as both a design element and for environmental control.

The architects knew that mullions made of carbon steel corrode, and when they corrode, they expand, and when they expand, they crack the glass. So the designers capped the mullions with 16-gauge stainless steel and sealed the joints. Over the decades, however, moisture infiltrated the system and the glazing began to fail. By the time SOM was hired to restore the envelope, almost none of the original glazing remained.

The spandrels, which were also glass, were reinforced with wire. Originally, the spandrel was limited by available glass size to two pieces. Now, however, glass can be manufactured in bigger units as float glass. SOM's spandrel detail for the restoration in 1996 duplicated the original with two pieces of glass joined by a mullion. When the new owner hired curtain-wall consultant Gordon Smith, he revised SOM's drawings so that the spandrel was a single piece of monolithic glass, but a nonfunctioning mullion was applied to keep the proportions the same. "To recreate the 1952 spandrel detail would have doubled the labor costs and required twice as many joints," says Smith. And besides, as both SOM and Smith agree, no one would know the difference.

Although the process of restoring and replacing the facade was extremely tedious, it wasn't more complicated than constructing a new envelope, because the original was well conceived. Wherever possible, Smith insists, the original carbon steel was scraped, coated with high-performance paint, and reused. A new aluminum subsystem was added to help prevent moisture penetration into the carbon steel. All the stainless-steel caps were replaced because Smith determined that it would have been too costly to remove, catalog, and store them during the renovation. The result is precedent-setting for the future care of Modern architecture. *Sara Hart*





Whereas the wired-glass spandrel panels were originally divided into two parts with a full mullion, now a nonfunctioning mullion (above and left) is applied to the panels. The environmental codes for energy use were waived so that the same single-paned glass could be installed.

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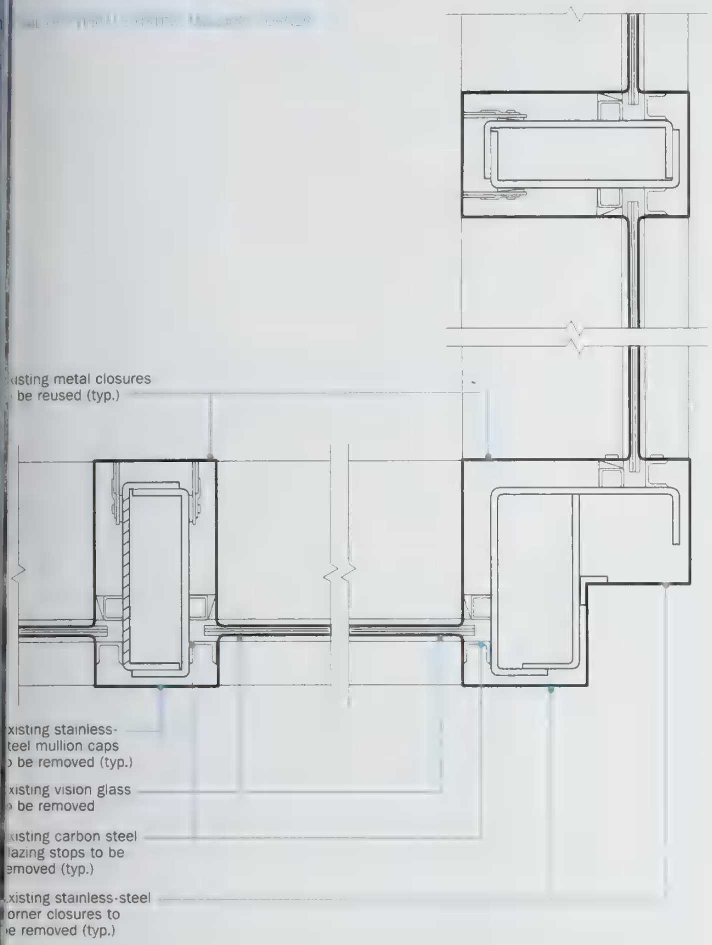
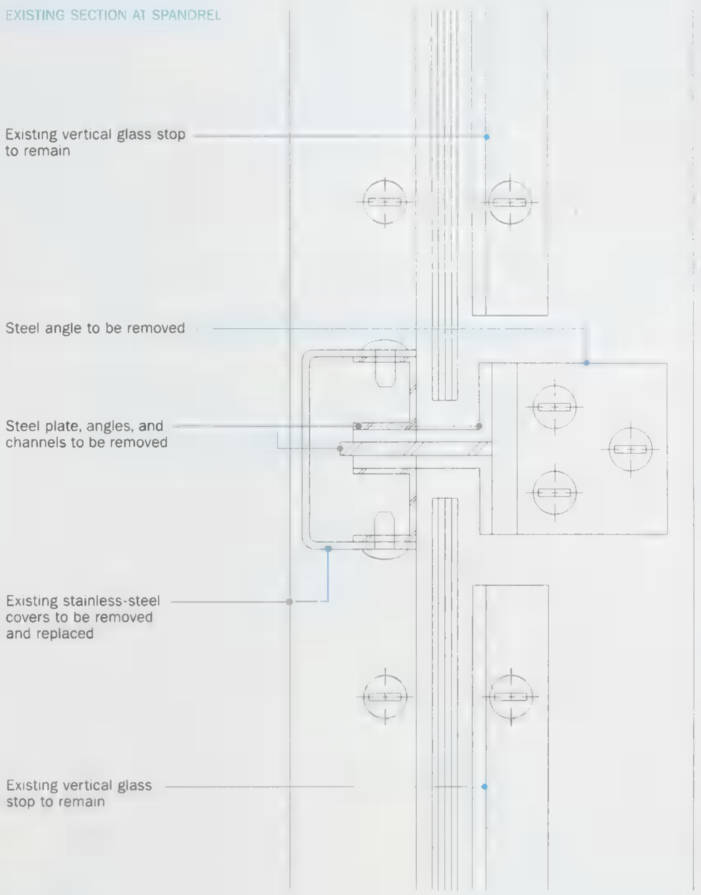
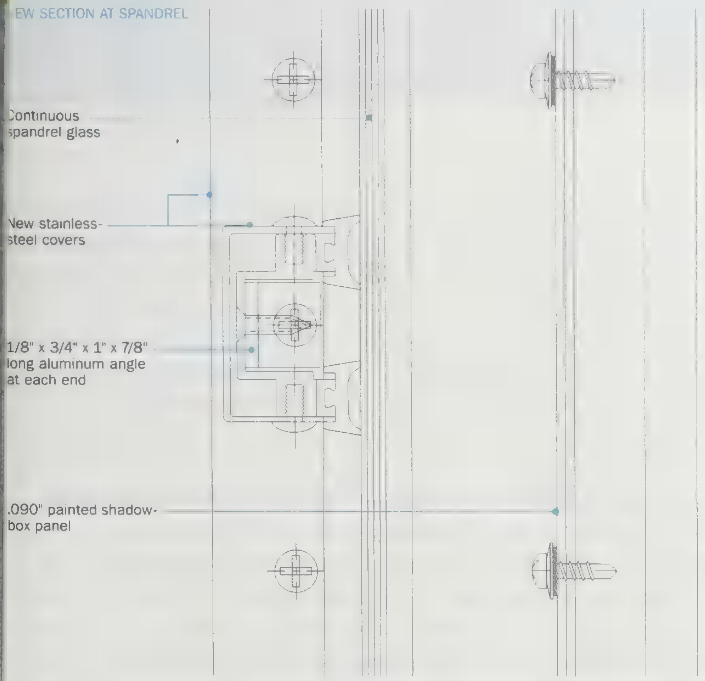


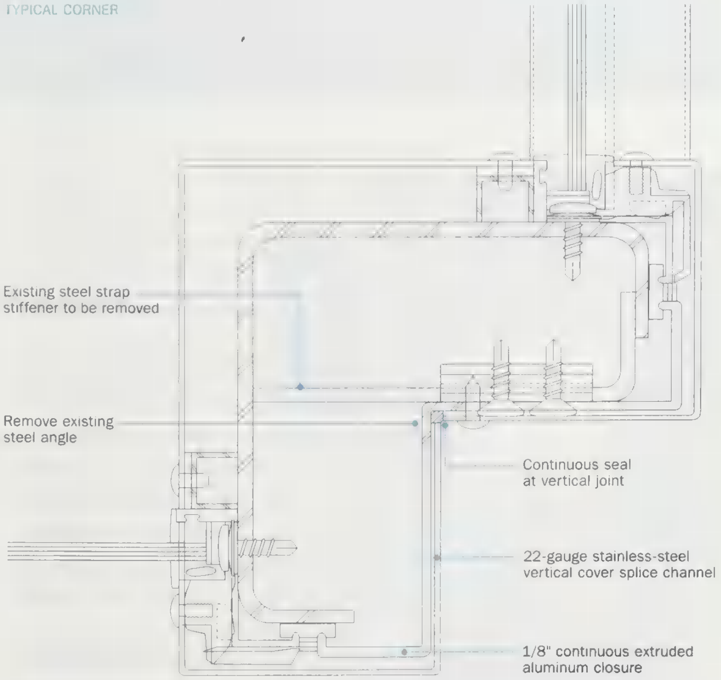
EXISTING SECTION AT SPANDREL

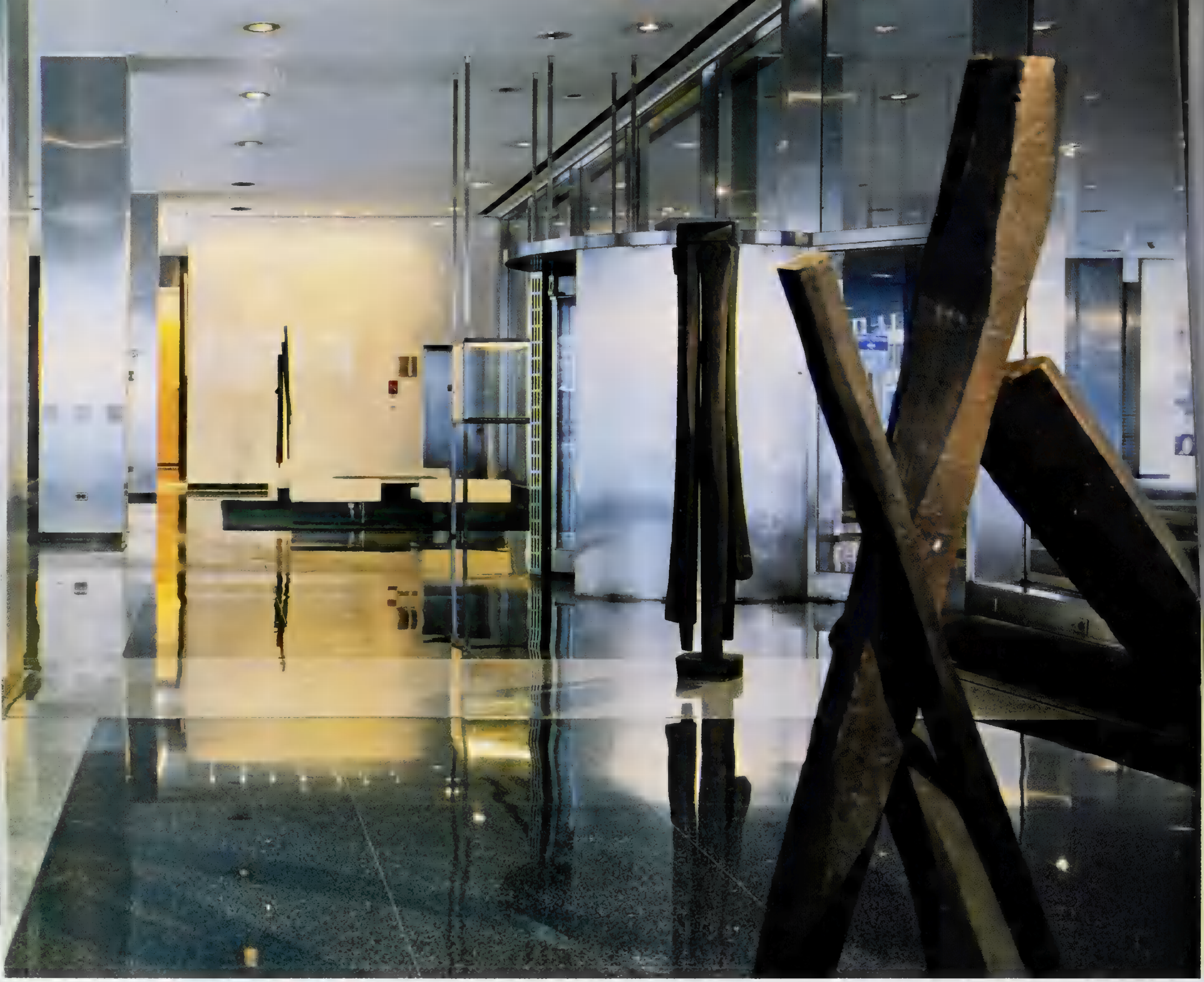


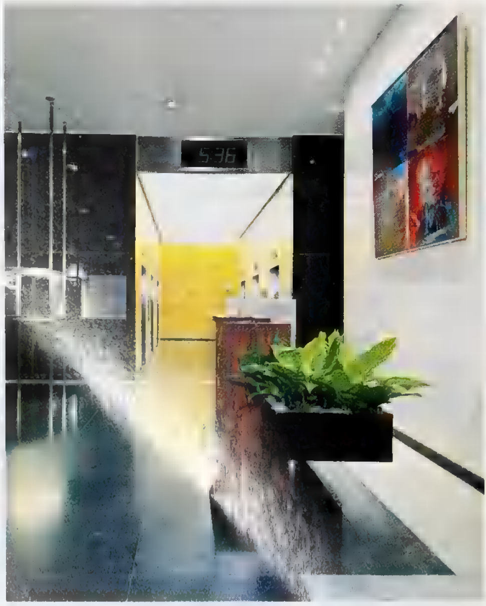
EW SECTION AT SPANDREL



TYPICAL CORNER





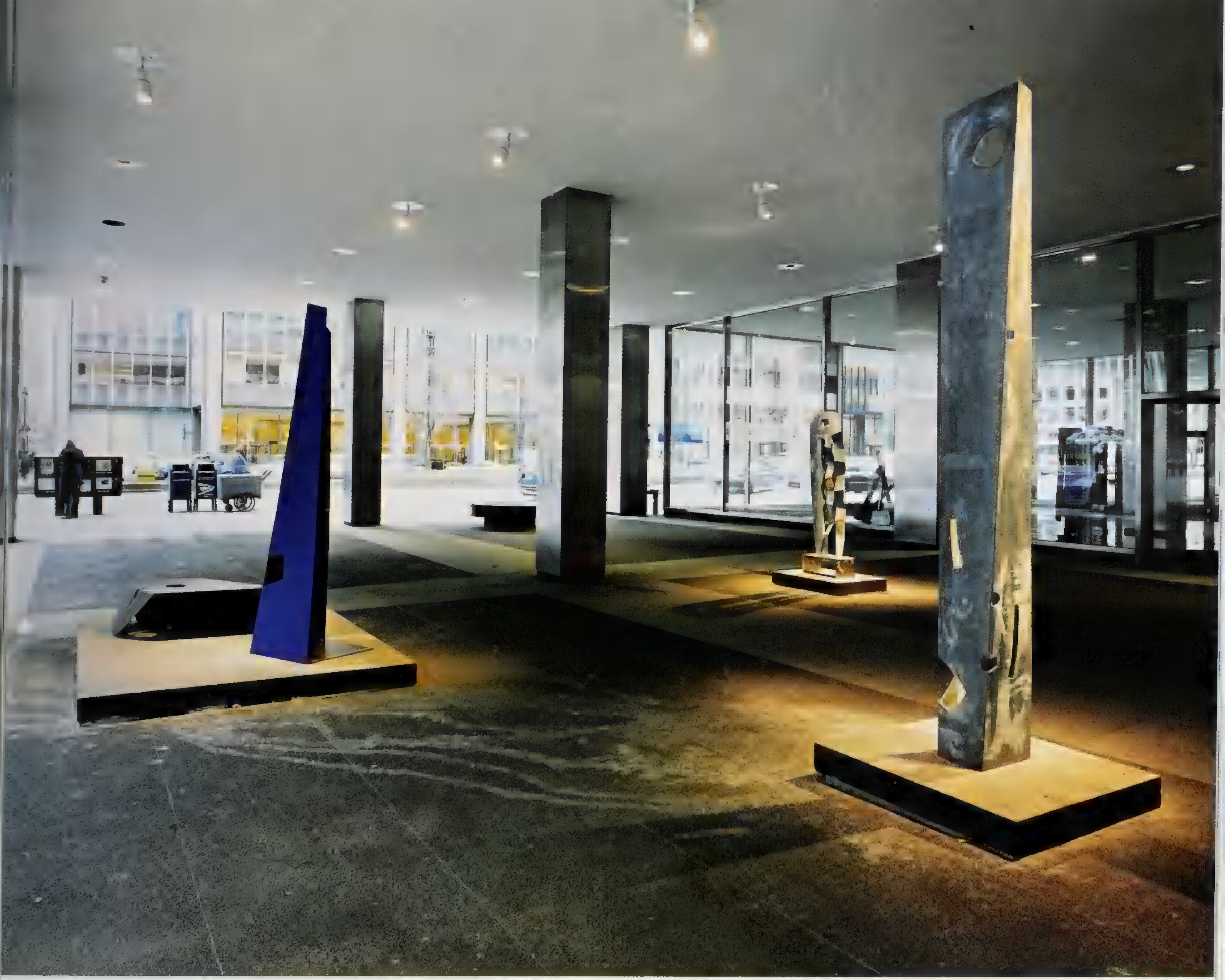


Georgis restored floors, ceilings, and wall surfaces, including the yellow mosaic wall at the rear of the elevator bank. Art curator Richard Marshall has mounted an exhibition of Isamu Noguchi's sculptures, seen in the lobby (above) and the north entrance plaza (opposite). This spring, a bar by London-based designer Marc Newson is scheduled to open at the south end of the complex.

capsule, where Unilever maintains an outpost of four floors).

Georgis designed the lobby's taut, planar furniture to be simple and svelte: The concierge desk is Claro walnut and brushed stainless steel with enameled steel panels, while the seating is white leather and steel, and the coffee table, glass and steel. As Georgis points out, the chairs are L-shaped, as is the table base in plan. "We got a little logo-happy," he says, "but we tried to keep it subtle." Working with lighting designer Johnson Schwinghammer, Georgis also created new custom lighting within the existing openings in the ceiling, plus flexible fixtures for the artworks.

The $60 million renovation on top of the undisclosed price for the lease meant that RFR needed to get fairly high rents for the floors ($65 to $80 per square foot), with partial occupancy occurring during the restoration. In order to attract tenants, RFR thought the plaza as well as the lobby could be enlivened. Even if Lever House's public areas had been a radical concept, truth to tell, the plaza was usually empty—and criticized for not adding much to street life. In the early days, Bunshaft had worked with sculptor Isamu Noguchi on an open space plan for the ground level. However, it was never realized, and ultimately SOM provided the planting design for the ground level and the third-floor terrace.



Now, with landscape architect Ken Smith, graphic designer Michael Bierut, of Pentagram, and art curator Richard Marshall, this situation would change. Ken Smith's impulse was to finally realize the Noguchi scheme, including fabricating sculptures that had been designed for the space. But the Noguchi Foundation was not in favor of their being reconstituted posthumously. Instead, working with Marshall, the foundation decided to lend sculptures on a temporary basis as part of an exhibition. On top of that, it went along with recreating Noguchi's plans for outdoor marble seating, composed of black and white squares and circles. The upper-level terrace has been replanted just as it was. For his part, Bierut developed signage, including a typeface, "Lever Sans," generated from the letters in the name emblazoned on the building.

By staying within the spirit of the realized and unrealized intentions, RFR and its team brought back the gleam of the original and enhanced the richness of the ground-floor spaces.

So is it authentic? After tussling with this question in his article in *Preservation* magazine, Wayne Curtis concluded that one has to think differently about authenticity in preserving a Modern machine-made building versus the handcrafted sort. The point is well taken. But most important is the conventional wisdom that it is not what you do, but how you do it that matters. Here, the level of quality and attention to the materials, details, and proportions of the new elements appear comparable to the old. "The level of detail Aby Rosen was willing to bring to this project is extraordinary," says Georgis. The company seems to have been taken with its new image: Shortly after buying Lever House, RFR acquired the Seagram Building, further burnishing the company's reputation for collecting high-caliber Modernist landmarks. And now as Lever House approaches its 51st anniversary, it attests to the merits of "authentic" restoration in the most modern (i.e., newest) manner. ■

Sources

Glass vision and spandrel panels: *PPG*

Stainless-steel and aluminum curtain wall: *Flour City Architectural Metals (defunct)*

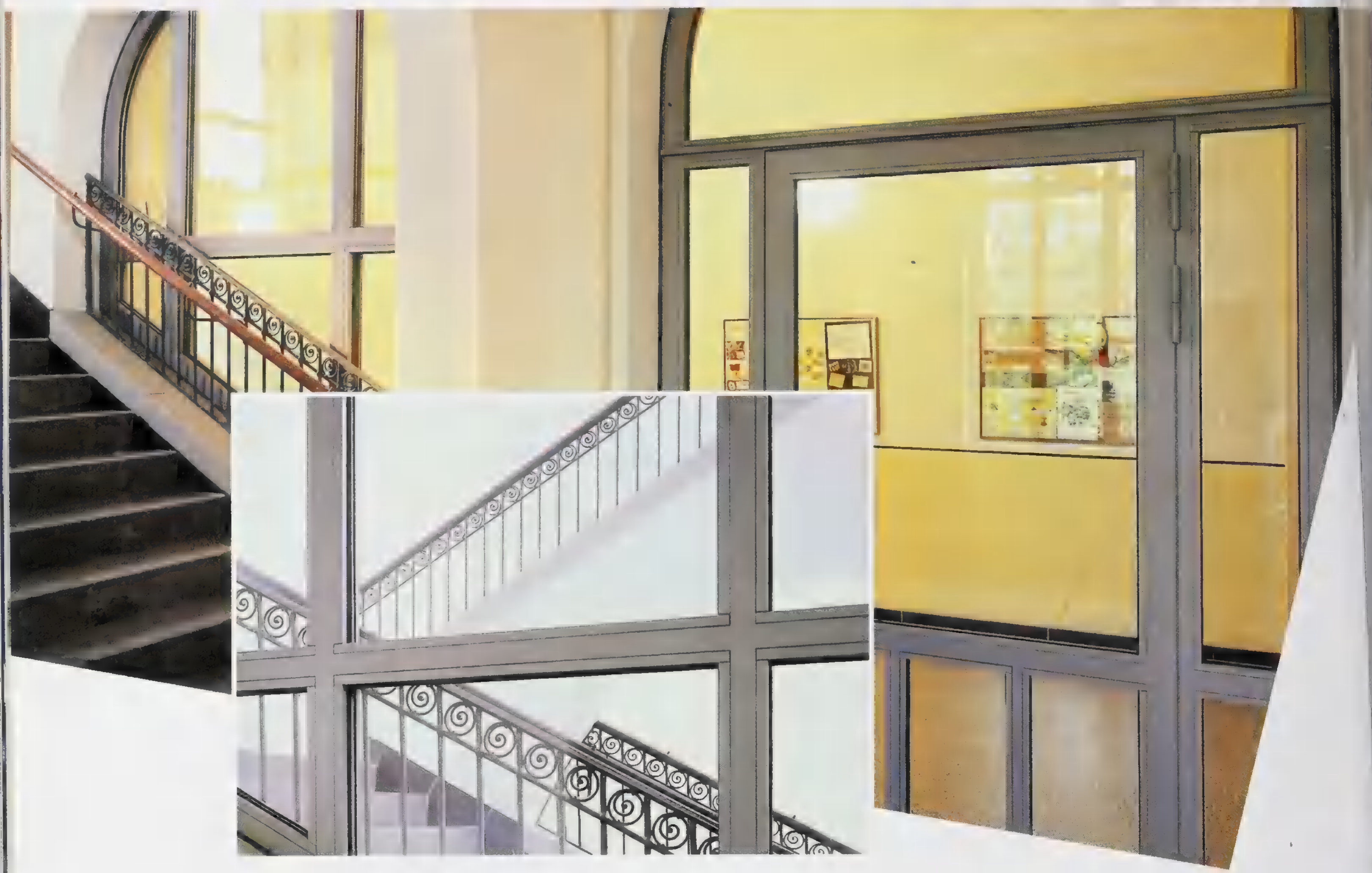
Concierge desk: *VCA-Volz-Clark*

Chairs (lobby): *La Chaise de France; Raredon Resources*

Table: *Raredon Resources*

Rug: *Patterson, Flynn & Martin*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



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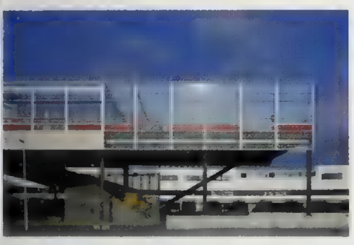
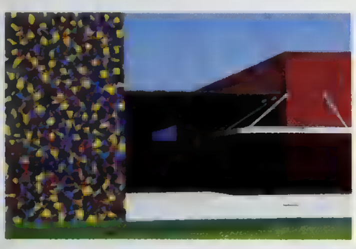
WHILE WELL-DESIGNED SCHOOLS FOR THE YOUNGER GENERATION SIGNIFICANTLY IMPACT THE QUALITY OF EDUCATION AND LIFE, PROGRESS IS SLOW.



1.

Oegstgeest, the Netherlands

Defying conventional notions of design in children's schools, Herman Hertzberger raises the classrooms up into the light-filled sky.



2.

La Joya, Texas

A modest but cheerful school designed by Kell Muñoz Architects reflects an aesthetic that is clearly "south of the border."

3.

Brooklyn, New York

A neighborhood in need of inspiration gets it with Mitchell/Giurgola Architects' bright, proud school and community center.

4.

Los Angeles, California

Daly Genik performs alchemy on an old warehouse and office building in one of the most impoverished neighborhoods in downtown L.A.

By Jane F. Kolleeny

Rare is the K-12 school building that is thrilling to look at. True, we see less of those painfully familiar, '60s-style boxy egg-carton structures with rows of classrooms and long dark hallways that resemble prisons. Even so, school boards, tight regulatory processes, and strict programming requirements all too often tie the hands of architects and curb imagination.

We are told schools are evolving toward a new architectural vocabulary to express our culture's changing values. Classrooms are wired for the Internet and flexible to accommodate cluster teaching. Schools double as community centers, providing a gathering place for after-hours events long after the kids go home. Instead of libraries that house only books, media centers with state-of-the-art technology are the status quo. Even as the nation suffers through a recession, the education construction market remains strong, at least for now. Yet, while there are financial resources and innovative ideas for new schools, overall the aesthetics are moving at a turtle's pace. In the words of Judy Marks, Hon. AIA, the associate director of the National Clearing House for Education Facilities (NCEF), which tracks education trends, "Change is slow, resembling small victories rather than broad reforms."

NCEF produced a document in November 2002 called *Do School Facilities Affect Academic Outcomes*, by Mark Schneider (www.edfacilities.org), which clearly showed that design excellence counts. Good indoor air quality, ventilation, temperature, lighting, and acoustics produce a notable positive outcome. Building quality, age, spatial configuration, and aesthetics also have a significant affect. Schneider cites research concluding that "student achievement lags in shabby buildings," and many studies have found fewer disciplinary incidents as building quality improves. The post–World War II baby-boom era saw an explosion in large schools, but that trend has shifted. An impressive body of research shows that small schools (300 to 400 students for K-6; 1,000 for 6-12) affect performance, especially for students in low-income areas.

The evidence that positive environments count puts into sharp focus the conundrum of why good design in schools is so slow to make progress. The environments provided for children have a huge impact on their attitudes and the quality of their education. With 20 percent of the U.S. population, nearly 55 million people, spending their days in elementary and secondary schools, shouldn't we be concerned? In the post-Columbine era, we really should. The four schools featured here demonstrate both innovation and good design. School boards, citizens, educators, planners, and architects should take note. ■

WWW For additional school projects, and more information on the people and products involved in the following projects, go to Building Type Study at **architecturalrecord.com**.

Primary School De Vogels
Oegstgeest, the Netherlands

1

HERMAN HERTZBERGER, A DUTCH LEGEND IN SOCIAL DESIGN, PLAYS HIS HAND AT OUTFITTING A SMALL SCHOOL AND RESIDENTIAL COMMUNITY.

By David Cohn

Architect: *Architectuurstudio Herman Hertzberger—Herman Hertzberger, Cor Kruter, Sonja Spruit, Geert Mol, Roos Eichhorn, Hans Snoek*
Client: *Municipality of Oegstgeest*
Consultants: *Adviesburo Steens (services consultant); Raadgevend Ingenieursbureau Eurotechniek (mechanical); dgmr raadgevende ingenieurs (electrical); dgmr raadgevende ingenieurs (acoustics); Tulux Lichtadviezen (lighting)*
General contractor: *Gebroeders Blokland, Hardinxveld-Giessendam*

Size: *11,200 square feet*
Cost: *Withheld*

Sources
Steel: *H. Buyk Construction*
Furniture: *Gebroeders Blokland*
Windows: *Kuin Kozijnen*
Concrete: *Gebroeders Blokland*
Paint: *Van Zanten*
Glazing: *Van Noordenne*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

A disciple of Aldo van Eyck and pioneer of the Dutch Structuralist movement in the 1960s, Herman Hertzberger is back. In projects such as the 1966 Montessori School in Amsterdam, Hertzberger championed the use of design as a catalyst for social interaction. Although overshadowed in recent years by new generations of Dutch architects, Hertzberger, now 71, continues to direct a busy practice, updating his formal language while maintaining his experimental outlook. In an eight-classroom primary school for a small residential development in Oegstgeest, a town outside Leiden, in South Holland, he demonstrates that his techniques of social design are as pertinent as ever.

Program

Hertzberger won the competition for the school and 32 adjacent row houses with his daring solution for a triangular site too small for the required program. In contrast to the dispersed developments of its surroundings, Hertzberger arranged the houses in a bowlike curve that defines a strong public space, like an English crescent. He placed the school at the spring point of the curve with views to all sides. But, as he observes, "no amount of juggling could prevent the housing and school from crowding each other out."

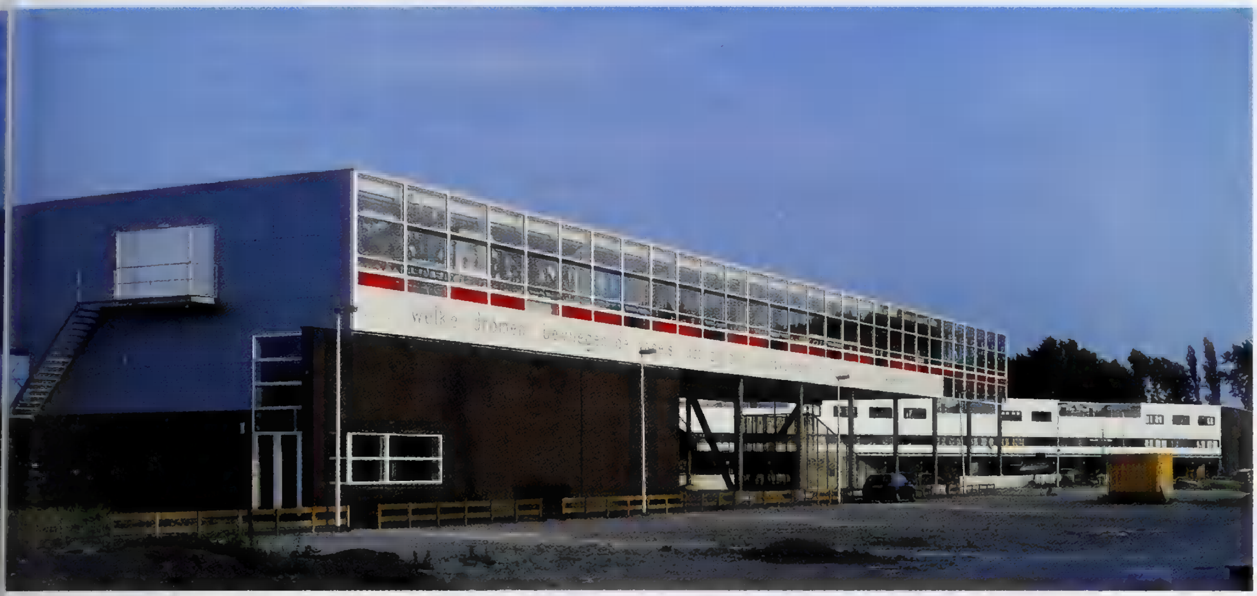
Contributing editor David Cohn is author of Young Spanish Architects *(Birkhauser, 2000).*

Solution

Defying conventional wisdom, Hertzberger raised the classrooms into the air "so that the houses have views uninterrupted by the school, and the school looks out over the houses." The strategy also created needed outdoor play areas. The classrooms are raised 16 feet to span the gymnasium occupying part of the site, "high enough so that the space under it isn't creepy." School manager Letty Vreeken likes the height for the extra daylight that it brings into the classrooms, but she misses "shade, grass, and trees" on the upper terrace. "It's lovely, but in the summer it's quite hot, though I wouldn't let anyone take it away." Hertzberger notes, "We had to overcome the traditional idea that children should be on the ground, that they need its protection." He counters that approach in saying, "There is more to see higher up; greater distances, clouds, a view of the neighborhood."

The building is accessed by a staircase that begins as a wide podium under the classrooms and zigzags out to rise along the eastern facade. Hertzberger explains, "Like everything else in the project, it was designed to become a social space. The beginning of the stair is like a stage, where children can wait or perform in connection to the playground. The stair isn't too steep, and the kids like to go up and down it quite fast. It is a barrier for the par-

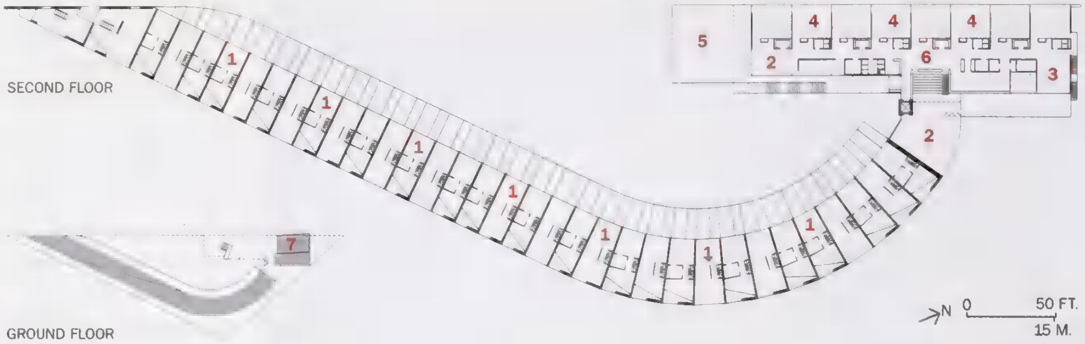
PHOTOGRAPHY: © DUCCIO MALAGAMBA



Defying conventional wisdom, the classrooms are raised 16 feet to span the gymnasium occupying part of the site. Manager Letty Vreeken likes the height for the extra daylight that it brings into the classrooms, but she misses "shade, grass, and trees" in outdoor areas.

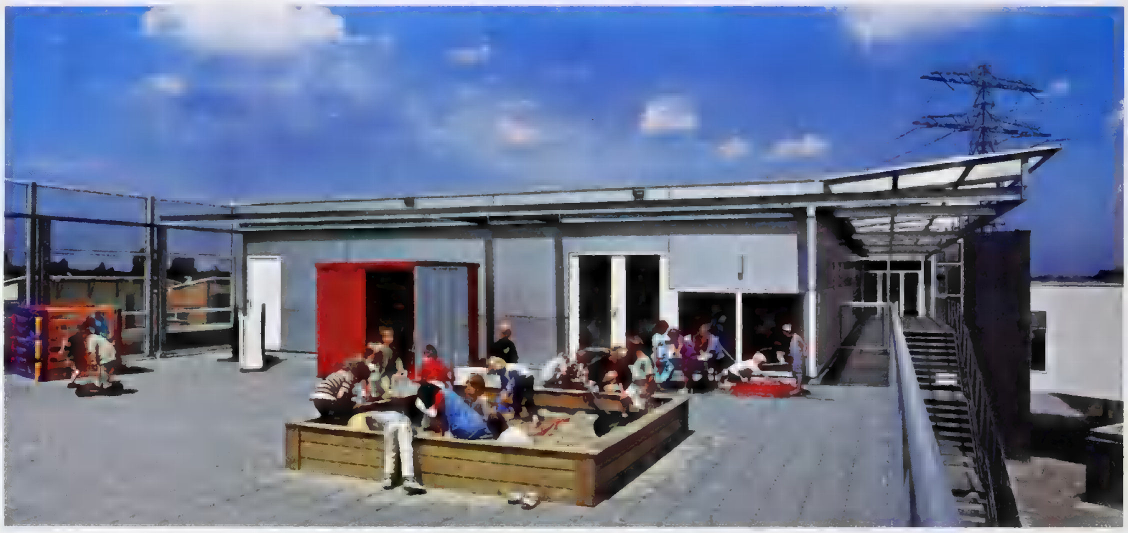
ents, perhaps, but the teachers are happier if the parents don't come in so often. And there is an elevator." But Vreeken cautions that the children sometimes use the stairs to "throw things down on other children. There are many accidents."

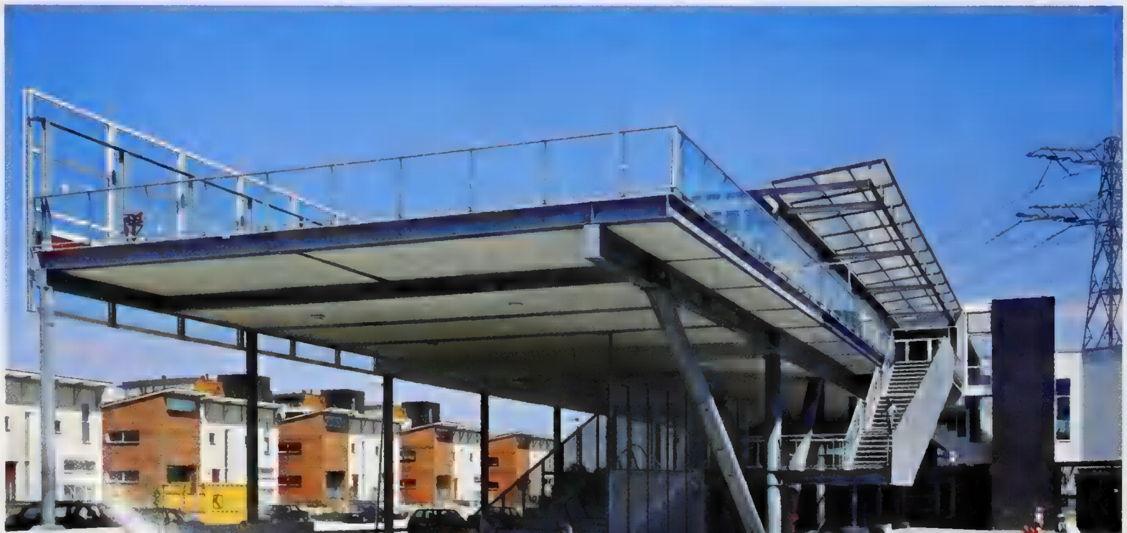
Hertzberger organized the interiors to break down the rigidities of a conventional school plan. "I tried to make the interior like a micro city," he says. The classrooms open via wide sliding doors to alcoves that draw small group activities into the corridor "streets." A "main square" in the form of an amphitheater steps down to a multipurpose room. Hertzberger notes that the variety and flexibility of spaces is particularly important for the different learning needs of the many foreign-born children in the school. Vreeken finds particularly useful the theaterlike main square and the open areas at each end of the corridor, dedicated to craft activities and the kindergarten, respectively. "They are fantastic spaces to work in," she maintains.

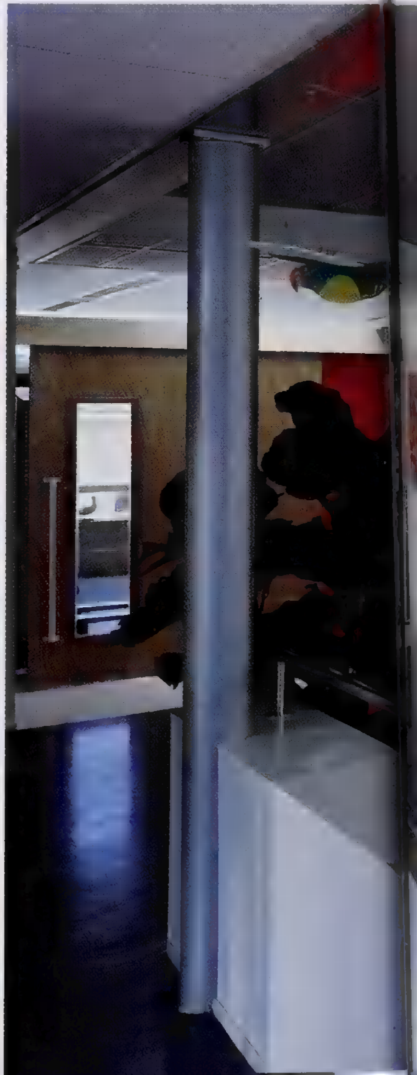


Raising the classrooms into the air created needed outdoor play areas (below). The building is accessed by a staircase that begins as a wide podium under the classrooms and zigzags out to rise along the eastern facade (bottom).

1. *Row houses*
2. *Multiuse rooms*
3. *Art studio*
4. *Classrooms*
5. *Terrace*
6. *Main square, amphitheater*
7. *Gym*





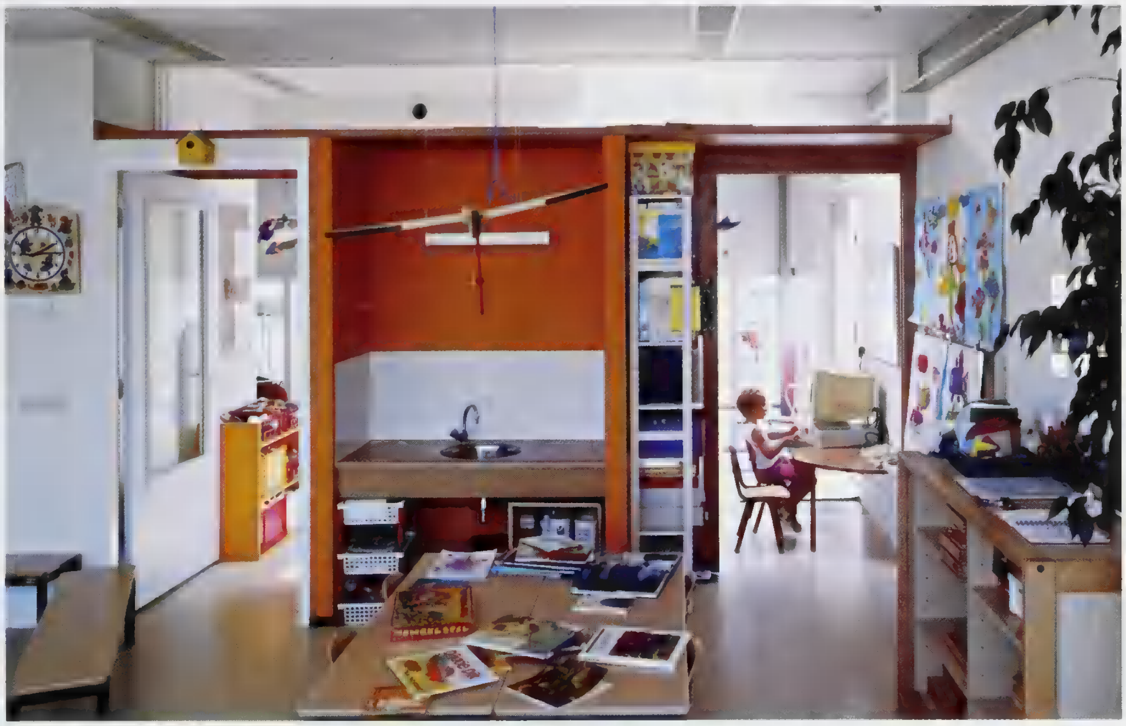


Commentary

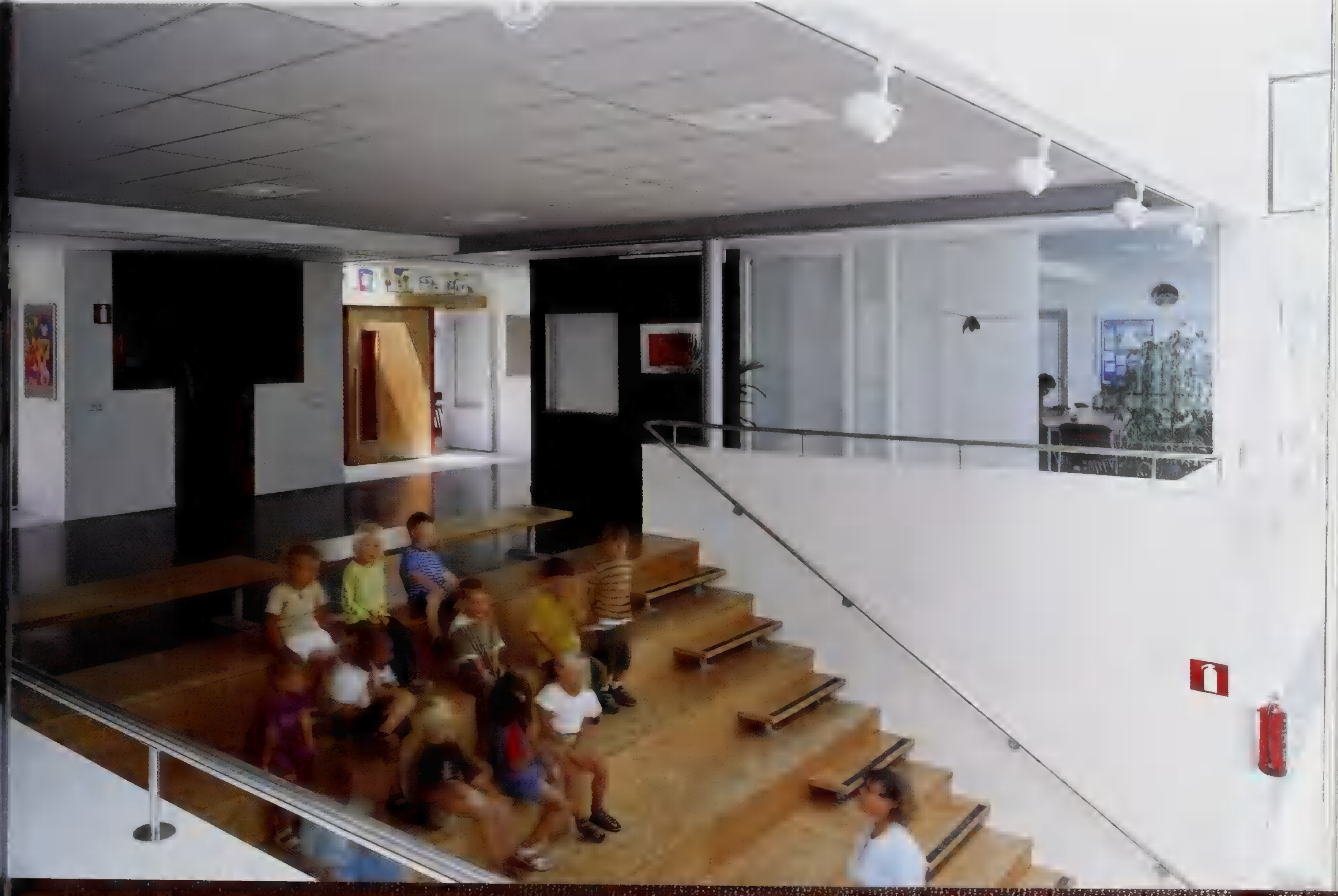
Hertzberger attributes the evolution of his formal language since the 1960s in part to changes in available materials—he finds steel and aluminum cheaper these days than the concrete and concrete block he formerly used. But more importantly, he says, he has become more flexible in his approach to design. "I try to let the program develop possibilities for adjustment; to make a form like an umbrella, where different things can happen underneath.

"From outside, the form of the school is very precise, but the form is open to change and adjustment; the terrace could be built into classrooms, and a new open terrace could be added, or perhaps a courtyard. It's not a monumental, finished object but the gesture of a roof under which there is more liberty and openness."

Indeed, the De Vogels school appears to be the work of a much younger architect, packed with provocative ideas. ■



The building is accessed by a staircase designed to become a social space (below). The classrooms open via wide sliding doors to alcoves that draw small group activities into the corridor (top).



Ann Richards Middle Schoo

La Joya, Texas

2

HONORING LA JOYA'S MEXICAN CULTURE, KELL MUÑOZ ARCHITECTS CREATES AN OASIS OF COLOR IN A HOT BLEACHED LANDSCAPE.

By David Dillon

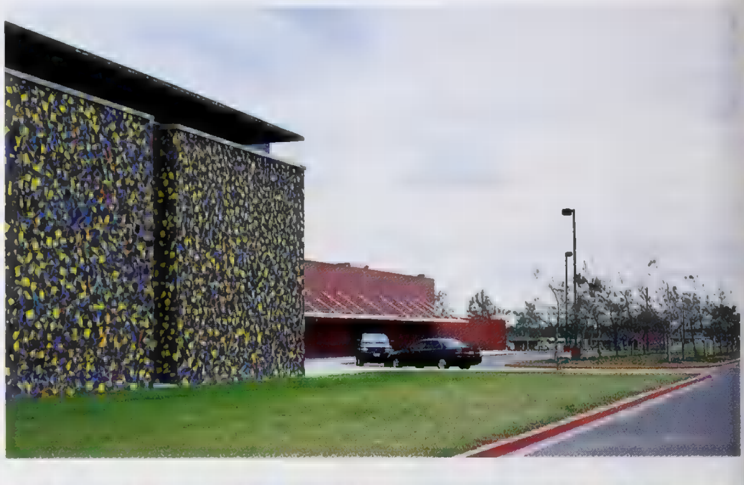
Architect: *Kell Muñoz Architects—John H. Kell, Jr., FAIA, Henry R. Muñoz III, principals; Steven Land Tillotson, AIA, Henry Ortega, AIA, Benito Polendo, AIA, Manuel Hinojosa, AIA, Hector Gamboa, Carlos Rios, Baldemar Bernal, Carlos Mejia, team*
Client: *La Joya Independent School District*
Consultants: *Hinojosa Engineering (civil/structural); HMG & Associates (m/e/p); Alexander Boedy Associates (landscape)*
General contracting: *Wilson Construction*

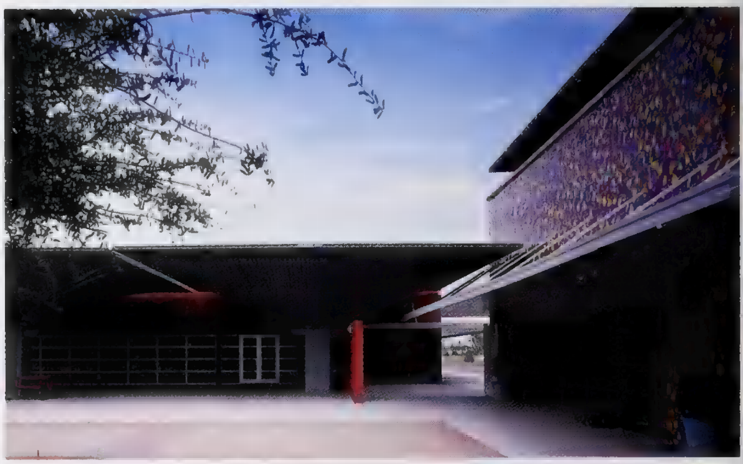
Size: *130,000 square feet*
Cost: *$8.4 million*

Sources
Wood doors: *Baur Flooring*
Glazing and metal doors: *Polvado Glass*
Metal/glass curtain wall: *Polvado Glass and Vistawell*
Hardware, aluminum storefronts, glass: *MacLaird Glass*
Tile: *Mion Terrazzo Tile and Marble*
Steel: *Tri-City Steel Fabricators*
Brick: *Valley Block and Brick*
Roofing: *Sechrist-Hill Company*
Paint: *Guerra's Paint Company*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**

La Joya sits on a flat, featureless stretch of the Rio Grande Valley between Laredo and McAllen, Texas. Its name, "the jewel," refers to a small natural lake west of town that early settlers claimed sparkled like a gem. But daily life is seldom so alluring. La Joya is a poor community of migrant workers and day laborers, who pick fruit, pour concrete, and look after the small ranches in the area. The dot-com boom of the 1990s was only a rumor here and in the rest of the valley.





Program

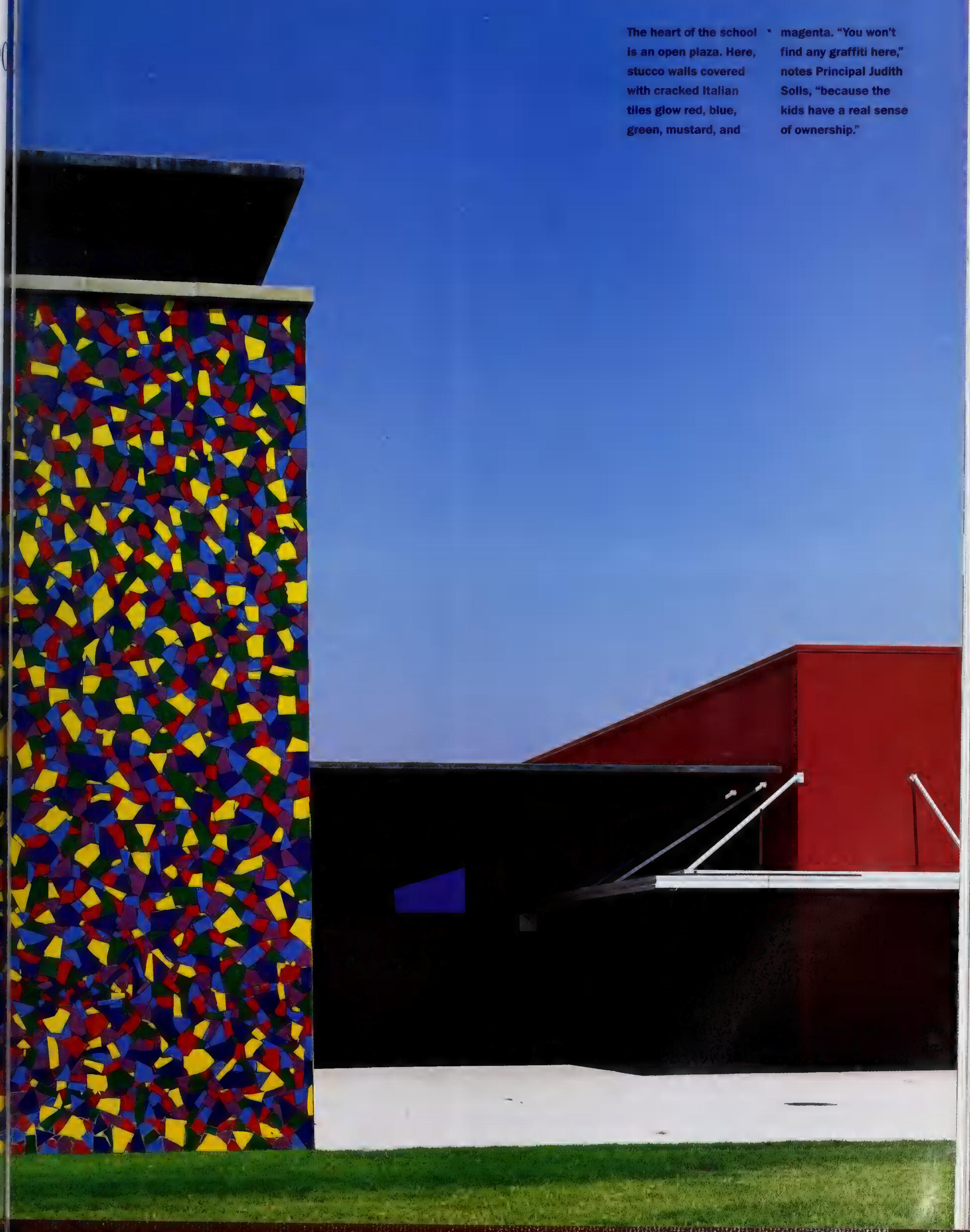
The Ann Richards Middle School, designed by Kell Muñoz Architects, of San Antonio, and named for the state's tart-tongued former governor, captures both the reality and the resilience of the town. Its architecture is direct and pragmatic, yet also playful and visually exuberant. Stucco walls glow red, blue, green, mustard, and magenta, the colors of Mexico and the desert. Several are covered with cracked Italian tiles that seem to vibrate in the South Texas sun.

School principal Judith Solis says it took time for the students to get used to the color. "Most schools are so bland that at first they were bewildered," she recalls. "Students from other schools teased them about being in a theme park. We had to teach them that the color exists in the rocks and plants of this place, that it is part of who they are."

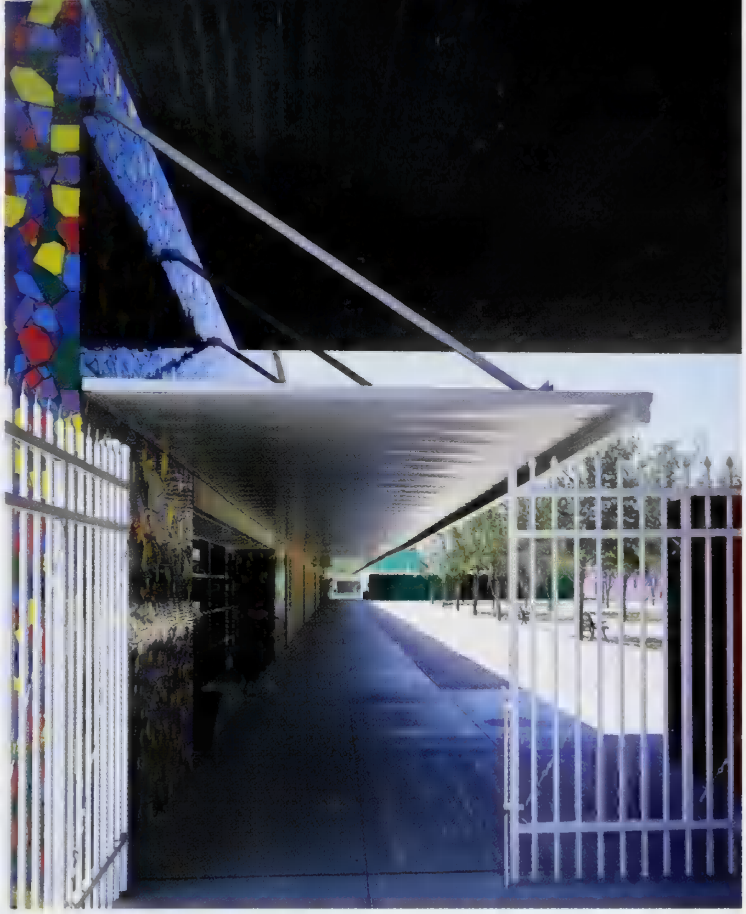
Solution

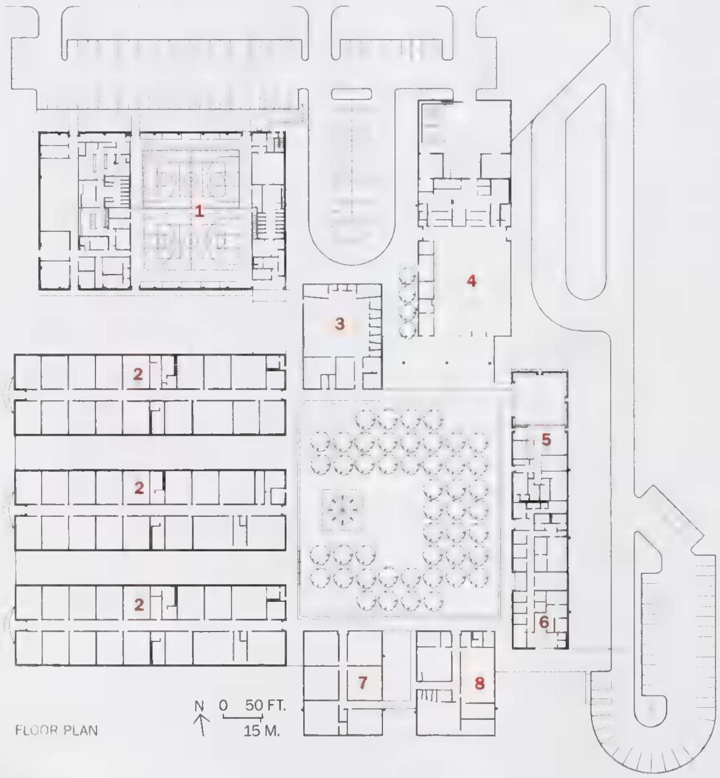
The heart of the school is a large open plaza, similar to those in the small Mexican towns from which many La Joya residents come. It is paved in concrete bricks, with a grid of live oak trees and a small pavilion, or *kiosko*, for festivals and performances. The plaza is the social and cultural center of the school, where students mingle between classes and return in the evenings and on weekends for special events. Former governor Richards, known to teachers and students as *comadre*, or godmother, bought the furniture for

Contributing editor David Dillon is the architecture critic for The Dallas Morning News.



The heart of the school is an open plaza. Here, stucco walls covered with cracked Italian tiles glow red, blue, green, mustard, and magenta. "You won't find any graffiti here," notes Principal Judith Solis, "because the kids have a real sense of ownership."





1. *Gym*
2. *Classrooms*
3. *Music room*
4. *Cafeteria*
5. *Library*
6. *Administration*
7. *Orchestra, choir, dance*
8. *Computer, art, theater*

the plaza and often donates the honoraria from speaking engagements in the valley for books and programs.

Kell Muñoz designed the school for 1,000 students, a number that has now grown to 1,250. All of them are Title I, and most are economically and linguistically disadvantaged, meaning that for them school is more than a place to learn English and math; it is a refuge and a sanctuary. "You won't find any graffiti here," notes Ms. Solis, "because the kids have a real sense of ownership in the school. It connects them to their own culture and encourages them to feel good about themselves." Each grade (six, seven, and eight) has its own classroom wing, long one-story rectangles with bright walls and black and white linoleum floors. Theater, dance, art, and music classes are held in adjacent buildings, which are linked by simple metal awnings that provide protection from the sun and rain. (La Joya is a center for mariachi music, and on many days visitors to the school are greeted by the sound of guitars and trumpets.) The gymnasium occupies a large, prefabricated metal building that fits the low-budget, ad hoc aesthetic of the school and the region.

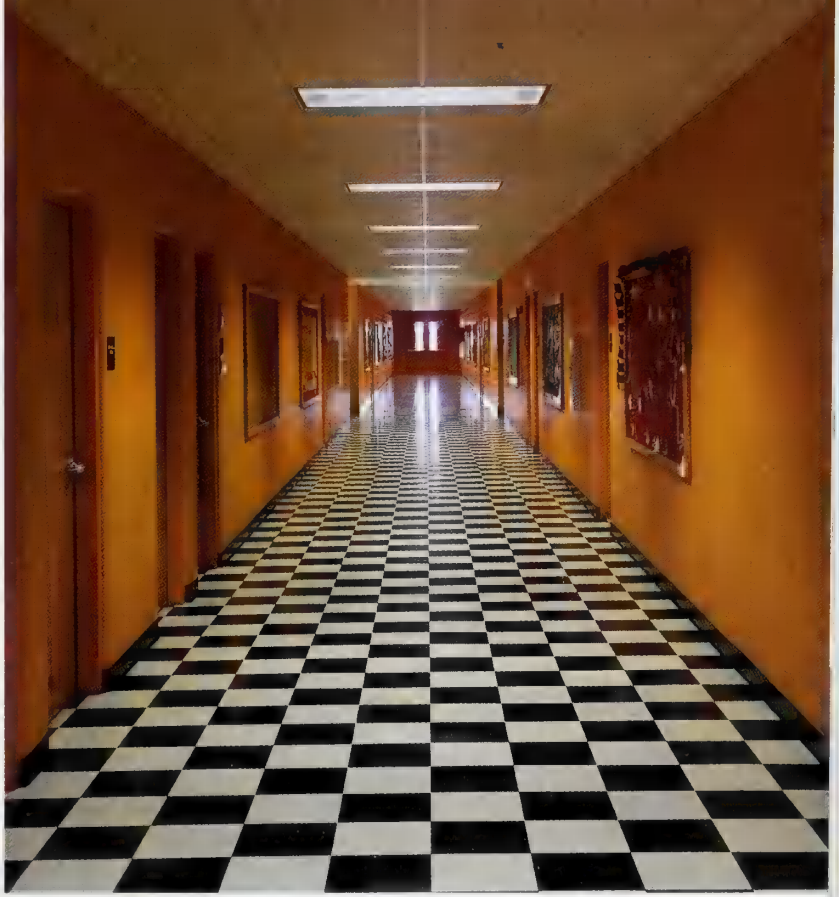
The architectural showpiece is the library, with its cracked tile walls and 20-foot hyperbolic paraboloid roof that rests on a single Mayan-style column in the center of the room. These bold forms were developed by Mexican architect Felix Candela and adapted by John Kell's mentor, O'Neil Ford, for schools and factories around Texas. They make the library a special place, where books and reading can open the door to the wider world.

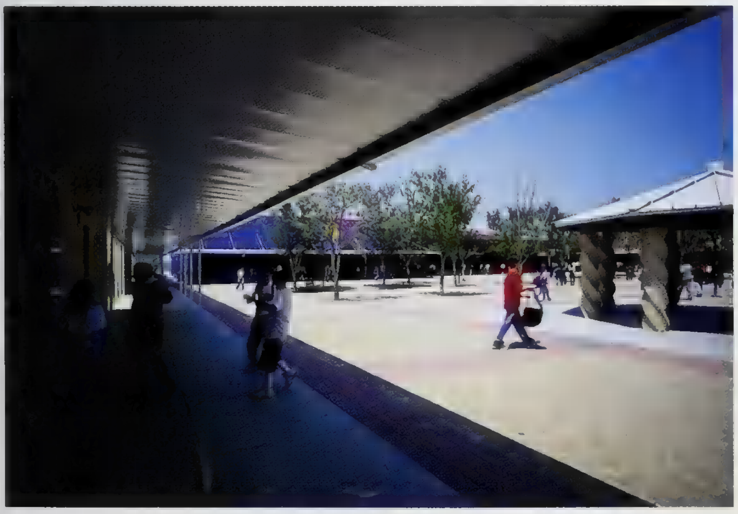
Commentary

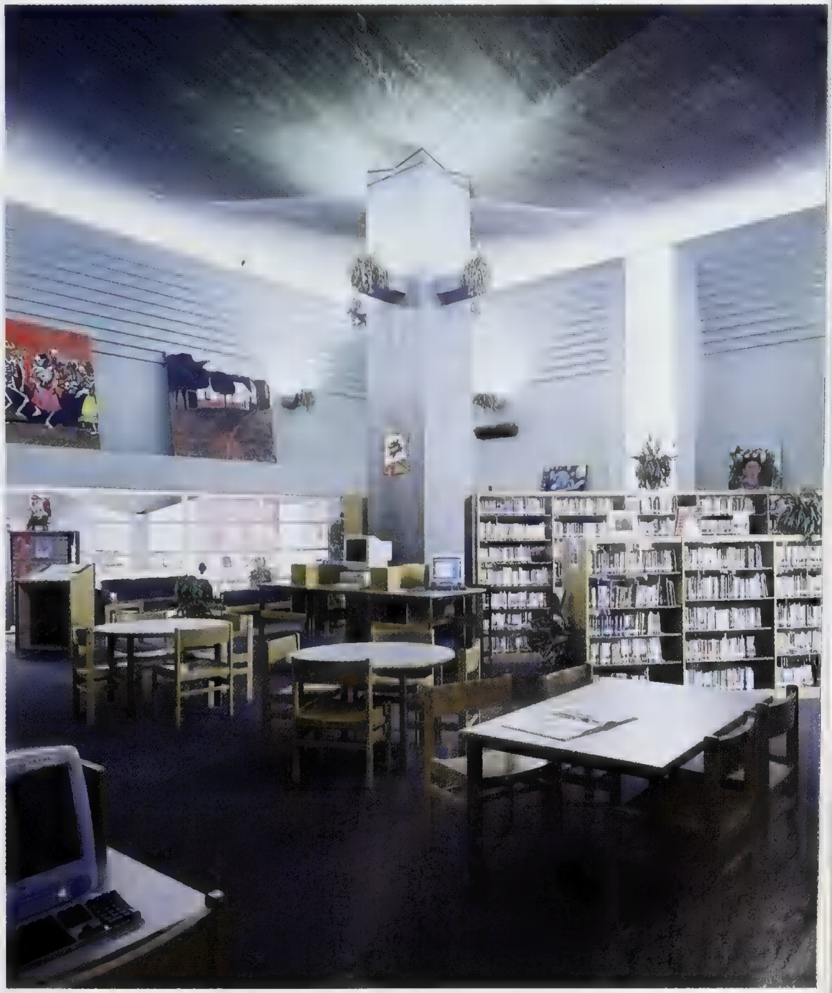
The school cost $9 million ($67 per square foot), and inevitably the economies show in some of the detailing. The paraboloid shells and the butt-glazed windows clearly stretched the contractors. But the architects' overall design is exactly right. La Joya needed a place that was intimate, lively, and welcoming, and the Ann Richards Middle School is all of those things—a source of pride and pleasure along a shifting cultural fault line. ■

PHOTOGRAPHY: © GREG HURSL

A large open plaza, peppered with oak trees and a *kiosko* used for performances and festivals, functions as the social and cultural centerpiece of the school (opposite, left and right; below left two). Inside, the hallways feature bright walls and black and white linoleum floors (top right), and the library houses a single Mayan-style column that holds up the 20-foot roof (bottom right).







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Brooklyn, New York

3

WITH A JEWEL-LIKE PRESENCE, MITCHELL/GIURGOLA ARCHITECTS' SCHOOLHOUSE STANDS TALL.

By Jane F. Kolleeny

Architect: *Mitchell/Giurgola Architects—Paul Broches, partner in charge; John Doherty, Virginia Kindred, Faek Braick, Susan Stando, John Kurtz, team*
Architect of record: *John Ciardullo Associates*
Client: *New York City School Construction Authority*
Consultants: *DVL Consulting Engineers (m/e/p); Ysrael A. Seinuk (structural); Langan Engineering (landscape, site, civil); Branston Partnership (lighting); Cini-Little (kitchen)*
General contractor: *The DeMatteis Organization*

Size: *157,000 square feet*
Cost: *$52 million*

Sources
Roofing: *Johns Manville*
Hardware: *Atlantic Hardware*
Ceilings: *Armstrong*
Custom woodwork and paneling: *Eli NY Design*
Ceramic tile: *Daltile*
Interior ambient lighting: *Lumax; MagniFlood; Lithonia*
Exterior lighting: *Holophane*
Flooring: *Azrock; Polysafe (auditorium)*
Plastic laminate: *Formica*
Paint: *Sherwin Williams*

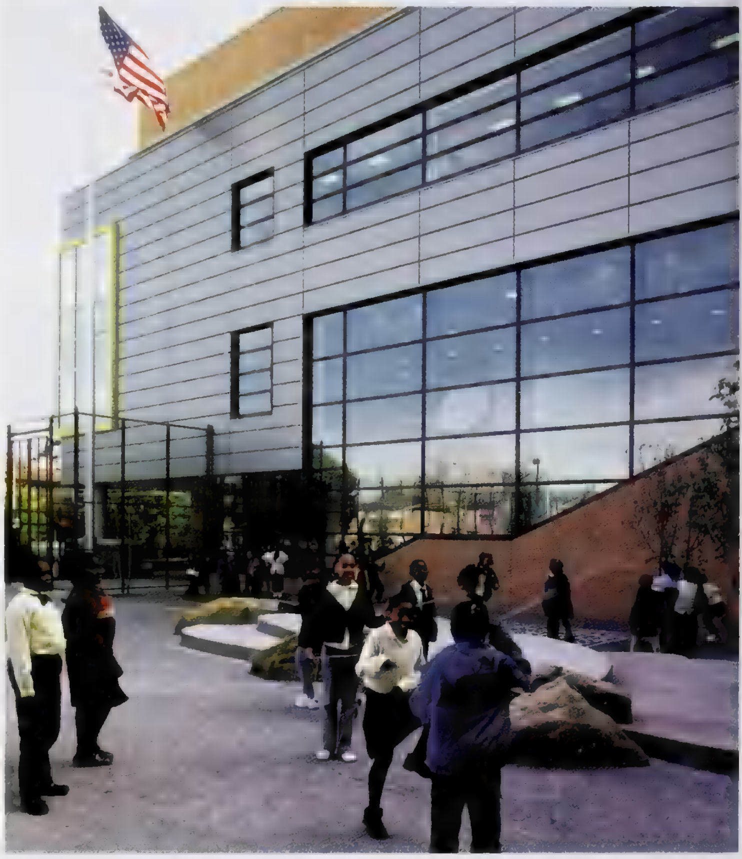
www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

In the mid-1800s, tract homes and high-density tenements changed a once-rural Brownsville into a dreary urban neighborhood in southwestern Brooklyn. Effectively a slum, with unpaved streets and no sewers, it was home to struggling first-generation Jewish immigrants who worked in Manhattan's garment district. After World War II, it was abandoned by the industry's more successful entrepreneurs, who were replaced predominantly by African-Americans. Although efforts were made in the 1970s and '80s to upgrade the area, it remains neglected today.

Brownsville needed a hero, and it appeared in the form of this school, which encompasses almost a full city block and plays a vital civic role in the rough and tumble neighborhood. Doubling as a community resource center, the building is utilized by most of the local families for performances, sports, and social and educational events. It replaces a 1908 school building on the same site that had been vandalized and was subsequently demolished, in 1993, because it contained asbestos and lead.

Program

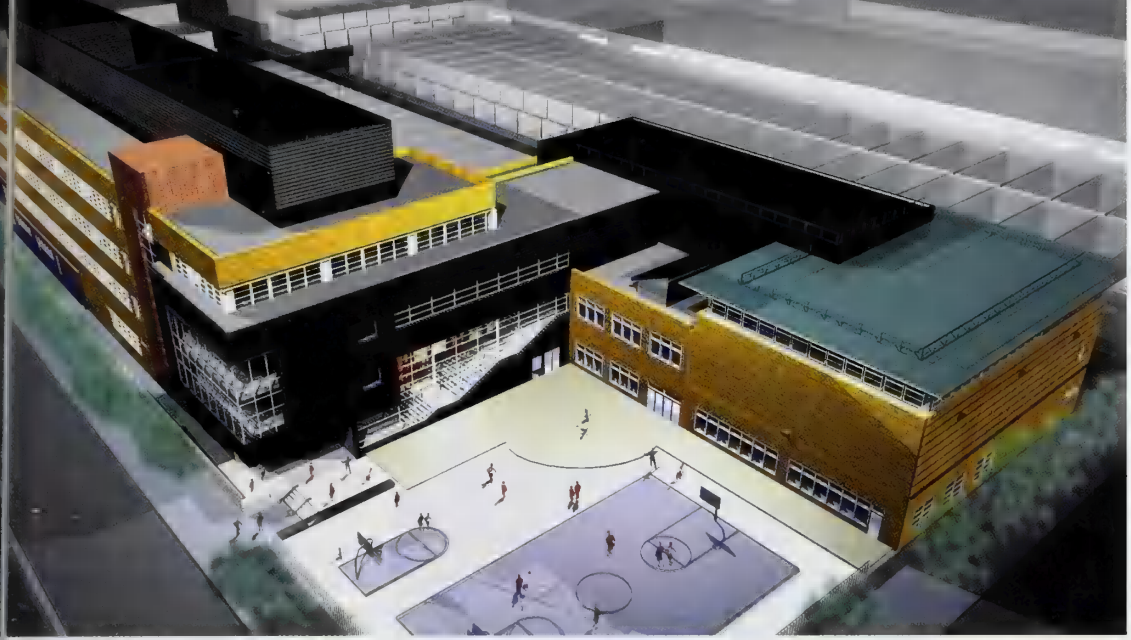
The new school accommodates 200 gifted seventh and eighth graders and 900 K-6 students. One long wing of the four-story building is composed mostly of classrooms, with the gym, cafeteria, library, and other public areas clustered in the other wing so that classrooms can be secured when the school is closed.



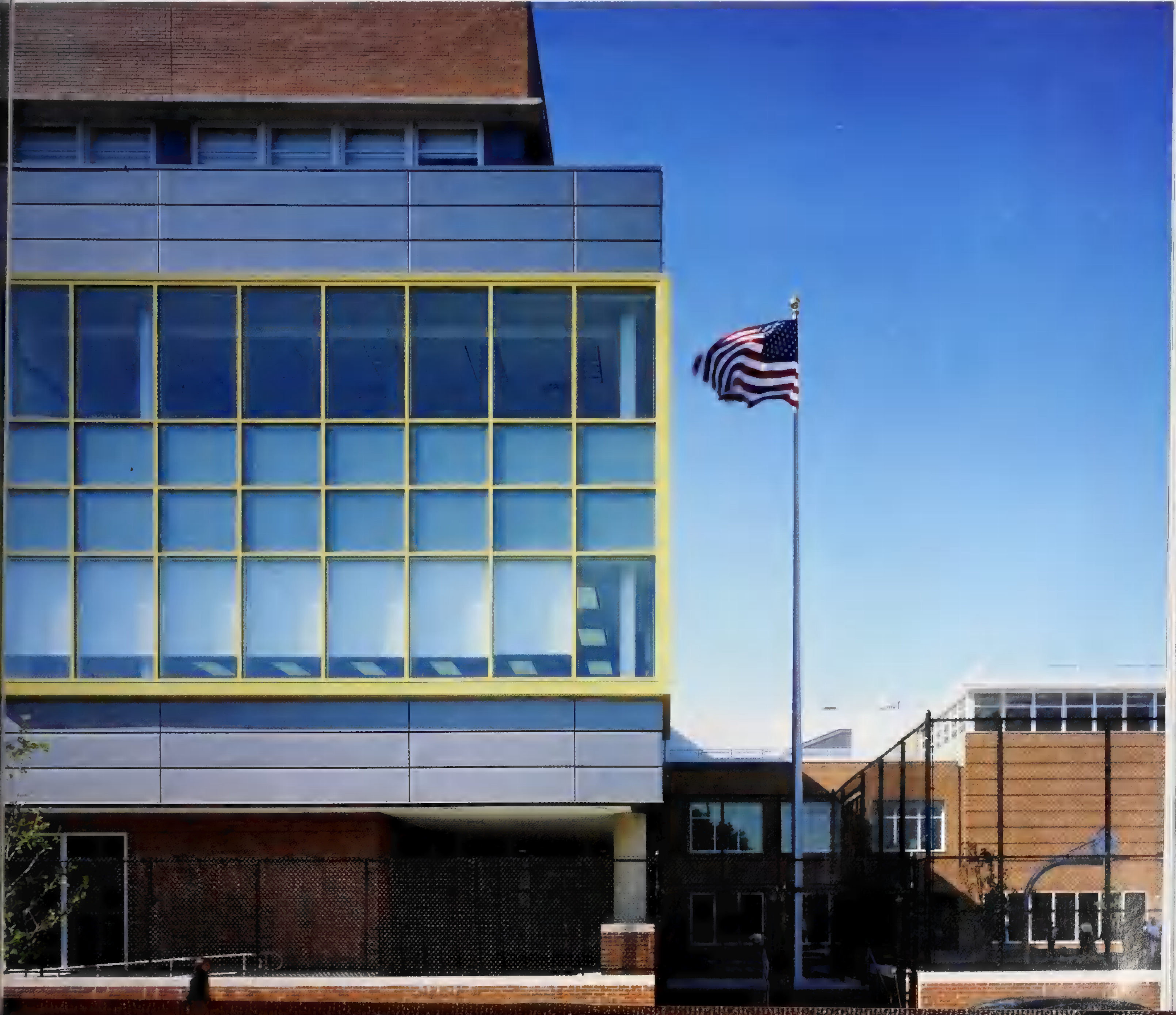
An Annenberg grant for art made it possible to offer the kids an enriched arts program. These funds helped create two arts classrooms, a dance studio, music room, recording studio, and a 416-seat, stadium-style auditorium. Principal Martha Torres, a cheerful, assertive woman who displays a combination of sternness and gentleness befitting a school principal, finds art to be a most effective teaching tool: "We present art in a multidisciplinary way—we discuss cultures, and the students explore them in every conceivable way—through dance, art, music, history, literature. Art saves these students."

Solution

As the central theme of the curriculum, art is also reflected in the school's design. The most visibly compelling part of the building, a two-story wall of glass tiles designed by



The tan-brick, white-trimmed mass of the school takes up almost a whole city block (left). At the main entrance, the facade is composed of a handsome aluminum panel system and yellow curtain wall (below and opposite).



noted sculptor Ned Smyth overlooks the prominent grand stairway marking the main entrance. Illuminated at night and prominently visible to the community through a glazed wall, it fronts Sutter Avenue, one of the main arteries in Brownsville. The playground and public areas of the school open onto this street, bringing in more life. Paul Broches, FAIA, of Mitchell/Giurgola Architects, remarks that "the school is the main civic building in the area and serves a critical community purpose in addition to its role as schoolhouse."

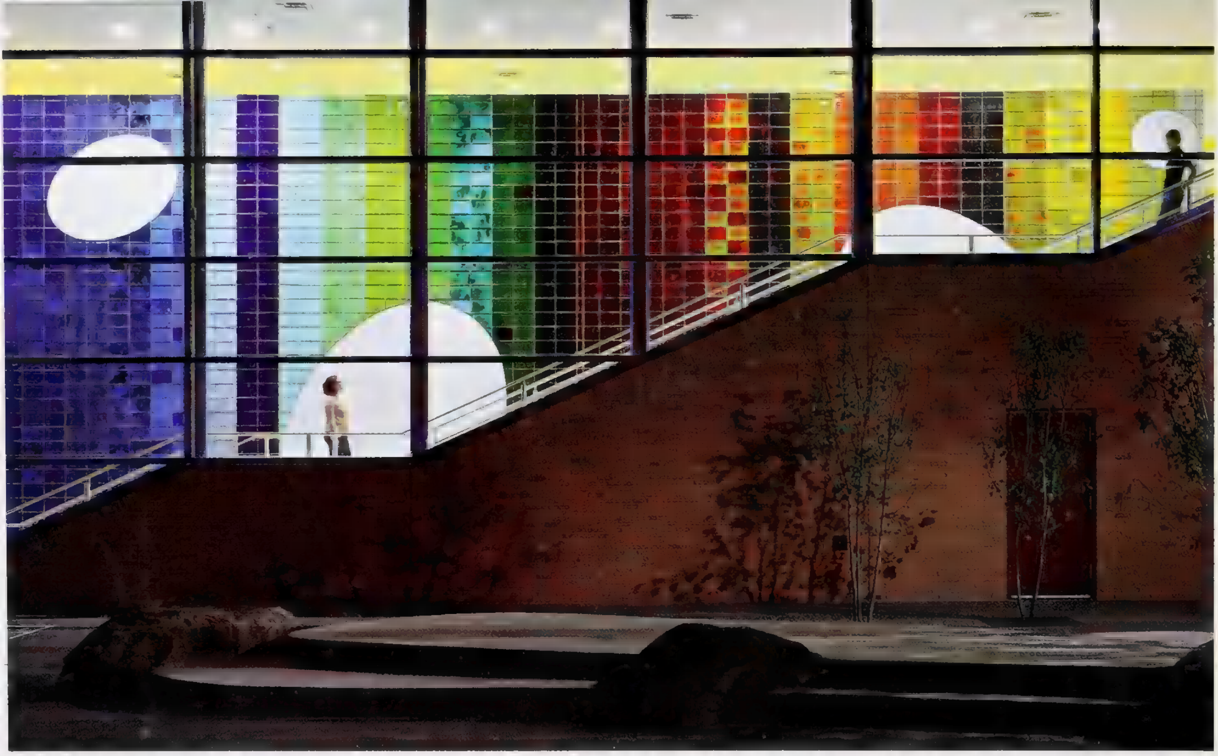
The client's design standards required security screening over the windows at the first-floor level. "Frequently other schools use expanded wire mesh, which has a somewhat prisonlike association. We have found a perforated metal panel that provides an equivalent measure of protection, if not more, and is much more attractive both looking from the inside and outside," says Broches.

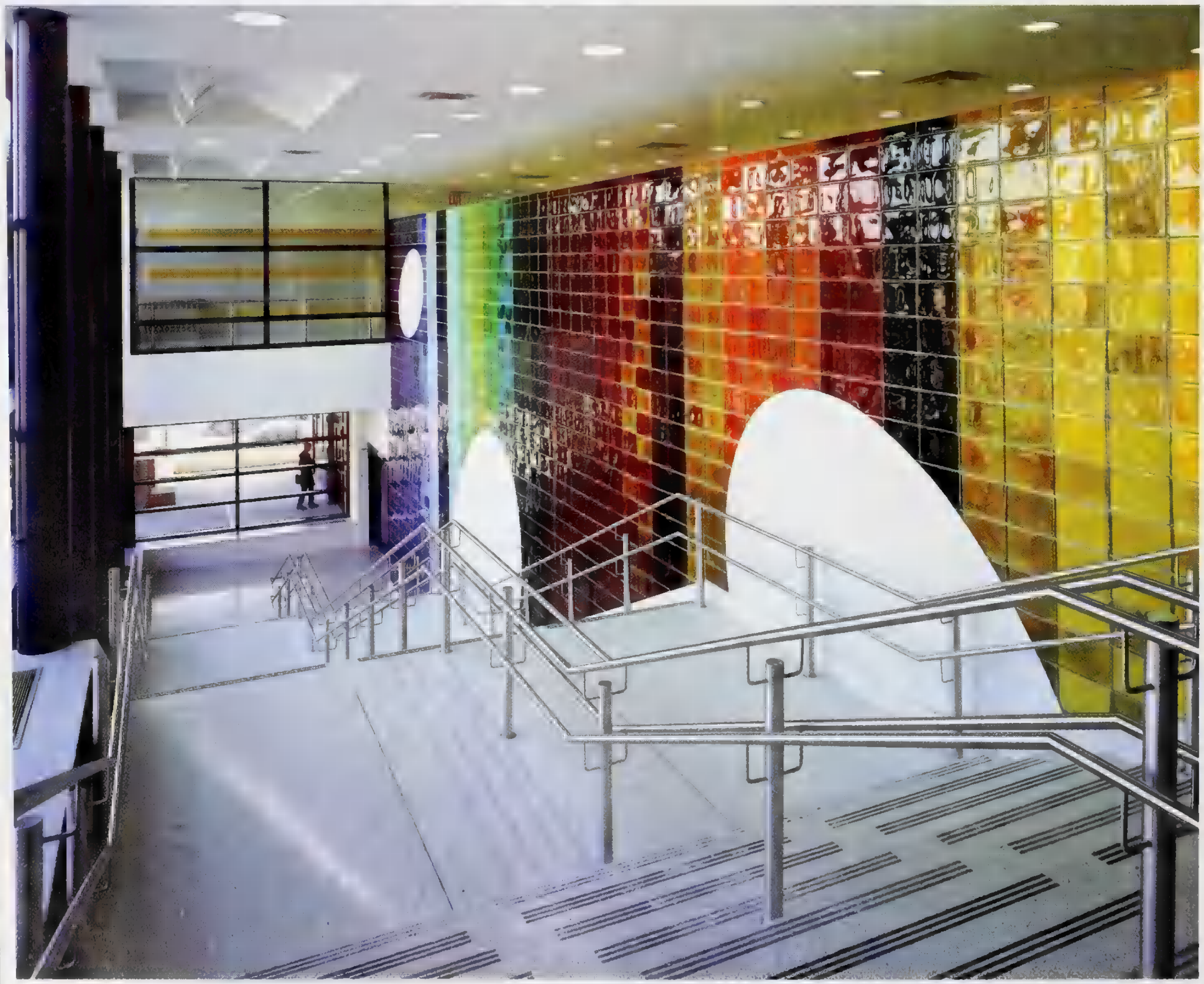
Standard features include durable, high-quality, low-maintenance materials: terrazzo floors, steel doors, painted concrete block walls in classrooms, and attractively finished glazed concrete block in corridors and all public spaces to assure a utilitarian, tanklike resiliency that is still user-friendly. Designed for future wireless use, classrooms are flexible and can be converted from standard format to the popular small cluster.

Commentary

School principal Torres copes well with the chaos that hordes of young children inflict. "We like the age mix of students. While they don't interact that much, the intermediate students become mentors and do internships with the younger kids." Through its clean design, large accommodating public spaces, and airy classrooms, the school has uplifted the local community. Torres continues, "Everyone wants to be here! Neighborhood residents have tried to establish residency in the school's catchment area in order to send their children here."

A delightful art exhibition



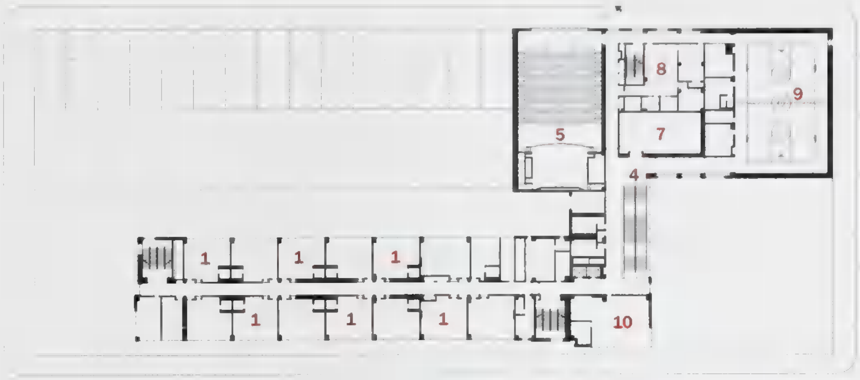


The design of the school supports the theme of learning through art. A wall composed of glass tiles (this page), glazed hallway display areas (opposite, left), and a 416-seat, stadium-style auditorium (opposite, right) all pay tribute to creativity.

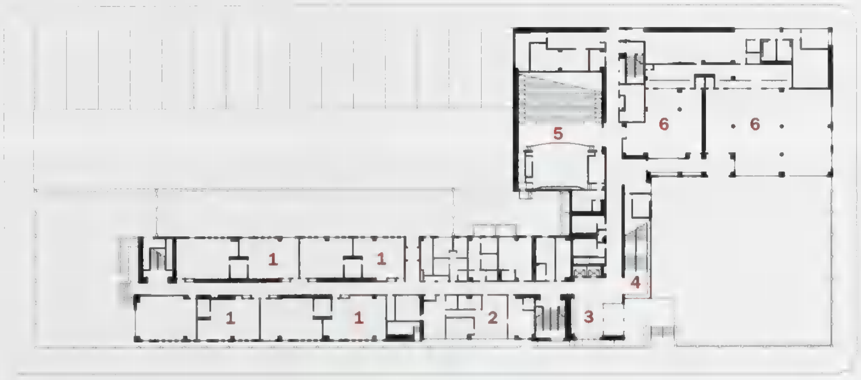
recently put together by the second graders spanned the length of one of the long corridors of the classroom wing. The kids had created an interpretive show about such famous works as Van Gogh's *Starry Night*, Da Vinci's *Mona Lisa*, and Matisse's cutouts and still lifes. The tiled and durable hallways provide the perfect, immutable surface for such transient displays—gypsum board would immediately have been torn to shreds. Additional glazed hallway display areas were designed by the architect so that each classroom can present their trophy works in protected public areas.

The tan-brick, white-trimmed mass of P.S. 156/I.S. 293 stands tall next to the adjacent row houses; in another neighborhood it might not be as exciting as it is here. It is clear from the cheerful faces of eager uniformed children lining the hallways that this school has gone well beyond the dictates of education, serving instead as an inviting beacon of hope for the whole community. ■

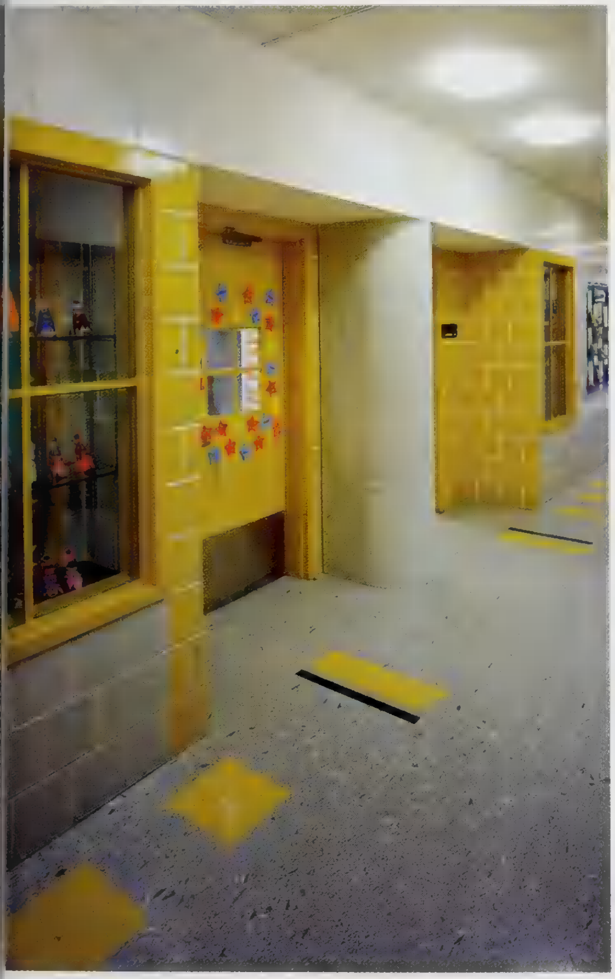
1. *Classrooms*
2. *Administration suite*
3. *Entry*
4. *Stair*
5. *Auditorium*
6. *Cafeteria*
7. *Dance studio*
8. *Music studio*
9. *Gymnasium*
10. *Art classroom*



SECOND FLOOR



GROUND FLOOR



Camino Nuevo Middle School

Los Angeles, California

4

LIKE A MAGIC WAND, DALY GENIK'S SKILL TRANSFORMS NEGLECTED BUILDINGS INTO OPPORTUNITIES FOR CELEBRATION.

By Alice Kimm

Architect: *Daly Genik Architects—Kevin Daly, AIA, principal in charge; Christopher Genik, AIA, Gerlinde Artzmann, Kyle Chad Clark, Josh Kenin, Alice Park, Brian Reiff, Chia Hung Wang, Jared Ward, team*
Client: *Pueblo Nuevo Development*
Consultants: *John A. Martin and Associates (Phase II, structural); William Koh (Phase I, structural); IBE Consulting Engineers (mechanical); Silver, Roth & Associates (electrical)*
General contractor: *Miller Contracting*

Size: *20,000 square feet*
Cost: *$3 million*

Sources
Elevators/escalators: *Schindler*
Interior ambient lighting: *Zumtobel*
Custom benches: *Nexwood*
Paneling: *Nexwood*
Cement plaster wall coverings, wall tile: *Daltile*
Paints and stains: *ICI Dulux*
Storefront door: *Kawneer Tuffline*
Storefront system: *Kawneer TriFab*
Metal/glass curtain wall: *Metal Sales (corrugated, perforated stainless steel)*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

In 2000, Kevin Daly and Chris Genik of Daly Genik Architects completed a highly acclaimed charter elementary school in Los Angeles [RECORD, February 2001, page 134]. The inspired transformation of an abandoned mini-mall, it fulfilled the first phase of a master plan for the new Camino Nuevo Charter Academy campus. The academy is the brainchild of Philip Lance, a highly proactive priest, who has been aided by school specialist Paul Cummins and charter-school developer ExED. Camino Nuevo responds to crisis conditions in one of the most impoverished areas of Los Angeles.

Featured here is the just-completed next phase—a middle school housed in an 8,500-square-foot, one-story former warehouse and an adjacent 10,500-square-foot, three-story former office building. The latter runs along Wilshire Boulevard, a major thoroughfare. With this project, Daly Genik continues its exploration into upgrading the conventions of generic building types and using derelict buildings to create vibrant cultural and civic facilities.

Program

When the school opens this fall, its 250 to 300 students will occupy 10 classrooms, four located in the one-story volume of the former warehouse and six on the second and third floors of the former office facility. (A continuous circulation system allows the two structures to function as one building.) The raised classrooms are linked by wide corridors that run directly alongside Wilshire. A parents' center and the school's administrative offices reside on the ground floor. An independently functioning community health center also occupies this level.

Alice Kimm practices architecture in Los Angeles.

Solution

Philip Lance comments that an urban school "is a chance to make a great impact on a neighborhood, where you have a large captive constituency; you can broaden the educational mission to include adults." He thus challenged Daly Genik to create a facility that celebrates the neighborhood and welcomes its residents—a facility that is, both formally and metaphorically, transparent.

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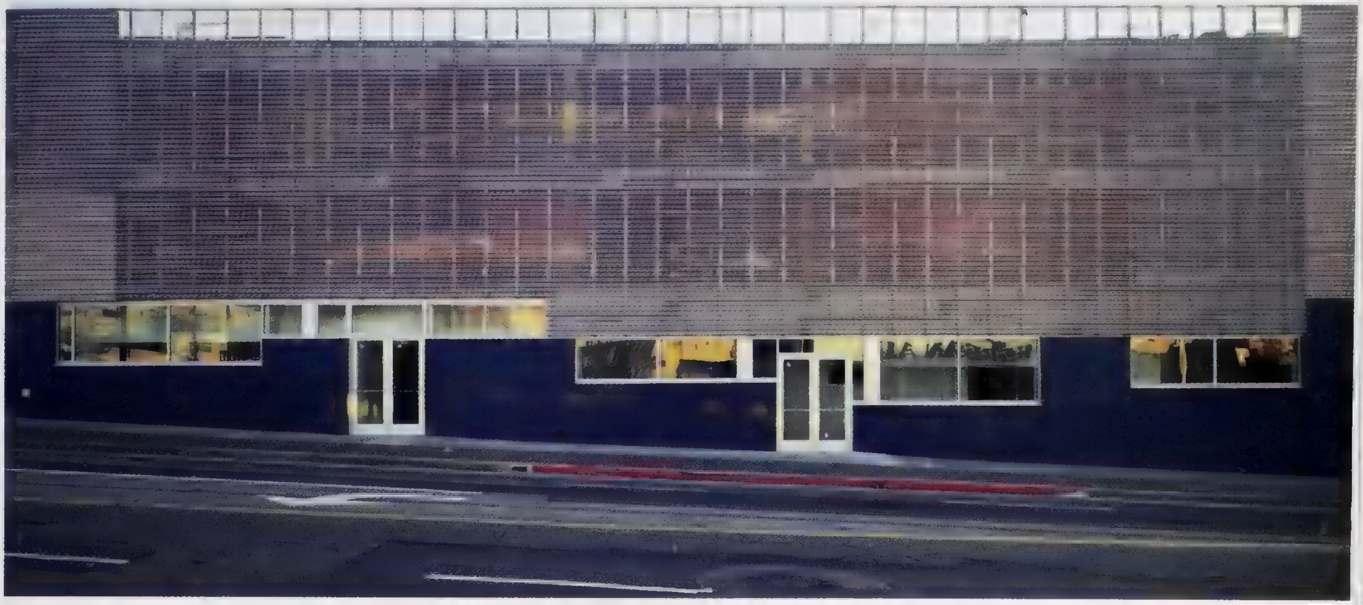
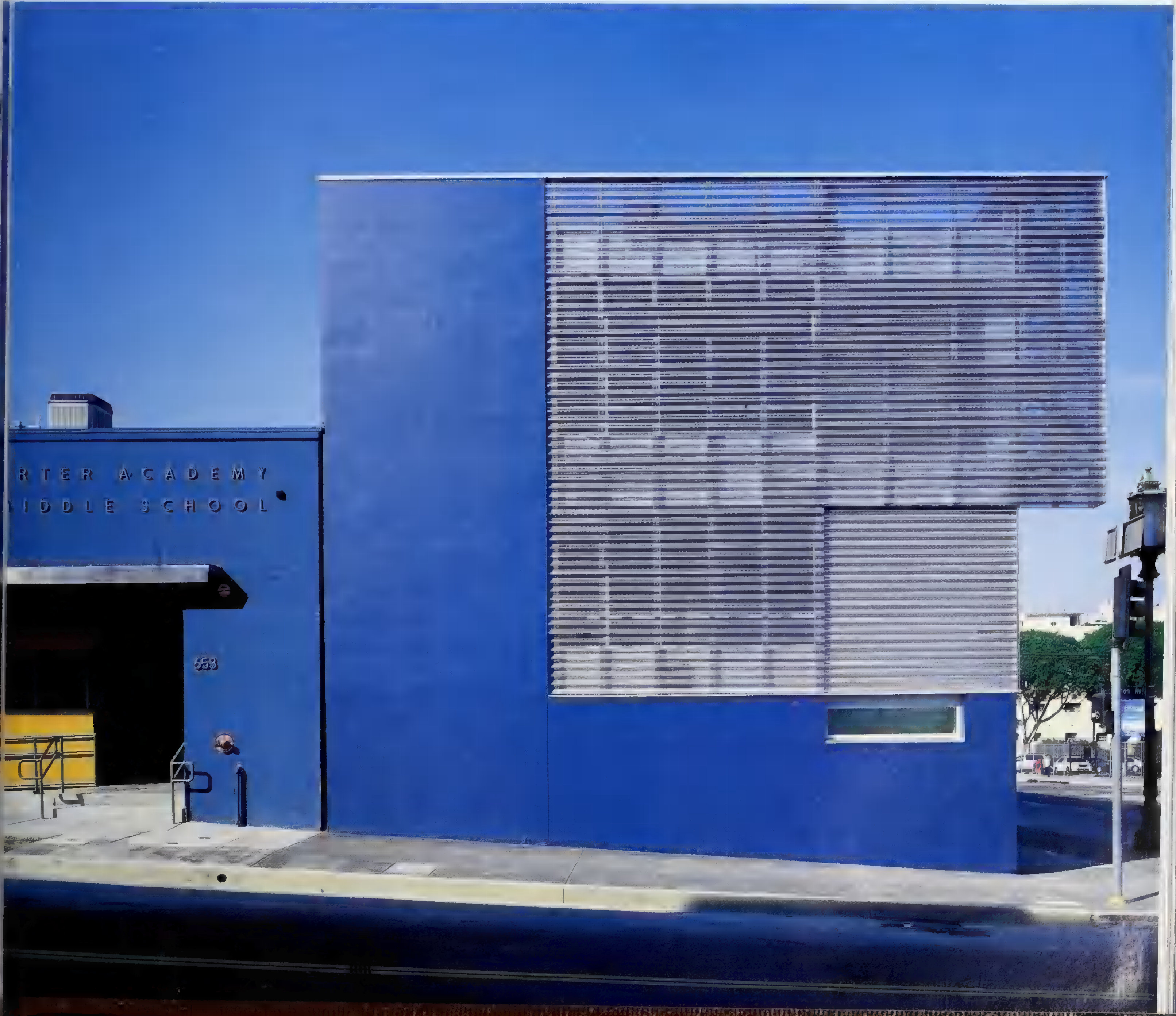
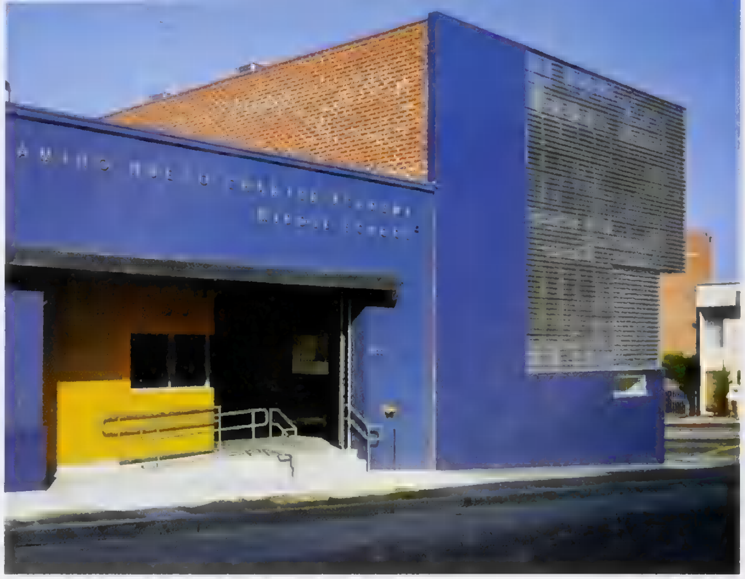
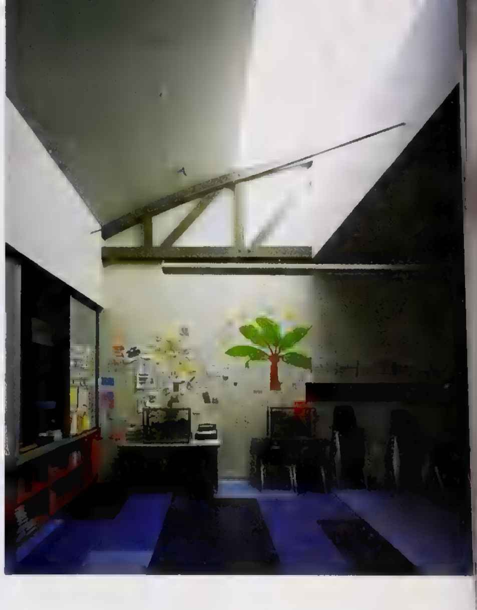
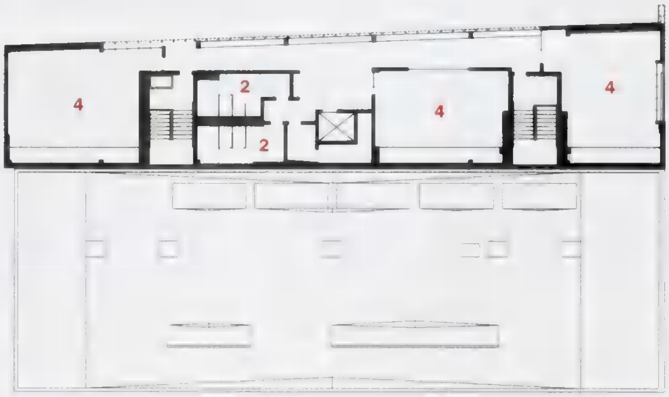




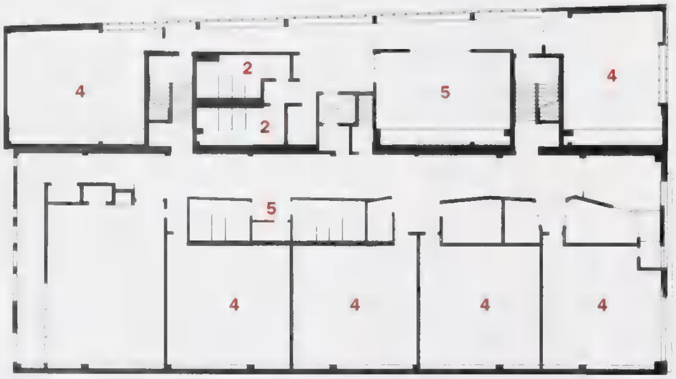




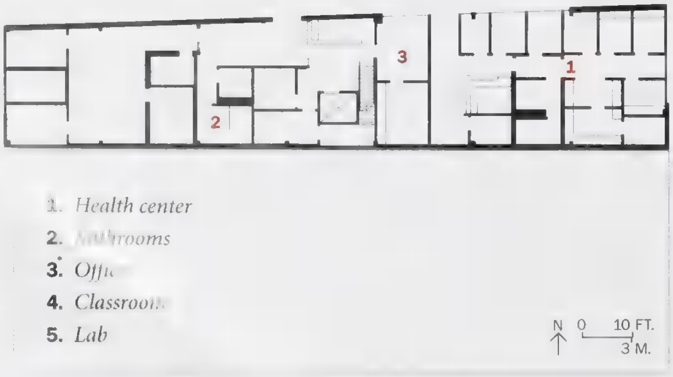
The school's main entrance is located in the one-story former warehouse, where it abuts the former offices (left). West-facing clerestory windows and large openings in the roof bring light into the classrooms (right).



SECOND FLOOR



FIRST FLOOR



1. *Health center*
2. *Bathrooms*
3. *Offices*
4. *Classrooms*
5. *Lab*

GROUND FLOOR

The main entrance to the school is located at the south end of the one-story former warehouse building. This structure is divided down the middle, with classrooms on the west side and the school's major circulation spine, or street, on the east. Looking through the front gates provides a captivating view down the street, which will be full of activity when the facility is open.

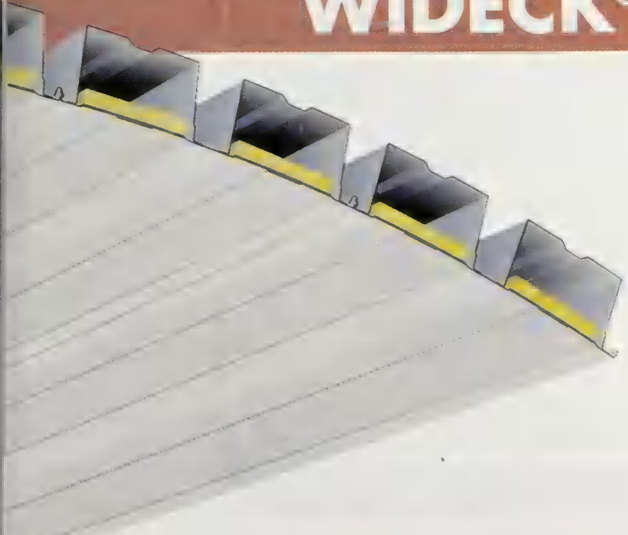
Introducing natural light into this building's interior was of utmost importance. This was accomplished with west-facing clerestory windows in the classrooms and large openings in the roof above the street. The openings are left uncovered; noises dissipate into the sky, and fresh air and light are present at all times. The street is further enlivened by a curved, folded, and colored plaster wall enclosing the classrooms. This wall further animates one's view into the school from the street outside.

The most interesting feature of the renovated, three-story office building is the treatment of the upper-story facades protecting the corridors along Wilshire Boulevard. The architects replaced the existing curtain wall with corrugated, perforated stainless-steel sheets to create a giant sunscreen. Light, views, and sound pass through its porous surface. From the street, silhouettes of people moving back and forth behind the facade are clearly visible. The transparency is vital; according to Kevin Daly, "Philip Lance's expectation that this school be a visible presence in the city influenced our thinking about this facade. We felt it to be our responsibility to bring a catalytic quality to it, to reveal some aspect that is totally unexpected."

Commentary

Camino Nuevo proves that liabilities such as run-down or abandoned buildings can be turned into assets. However, reusing existing structures is not this project's only lesson. Its openness to the surrounding neighborhood, in answer to Philip Lance's original mandate, creates an important urban impact. As Daly notes, "There is no way to isolate it. Because of its open-ended nature, the perimeter is never set. The boundary is a set of possibilities." He expands on this approach: "The school could become one in a chain of projects logically connected throughout the city as social infrastructure."

While there is little certainty that such a windfall of development would come to pass in the area, those who care about the quality of urban life are hopeful. Camino Nuevo provides an exciting alternative for needy neighborhoods that have only small parcels of land with existing buildings on them to offer up as potential development sites. If this school can take up an entire block previously composed of abandoned and underused structures and turn it into a vibrant and stabilizing force in the community, then this is good news indeed. ■



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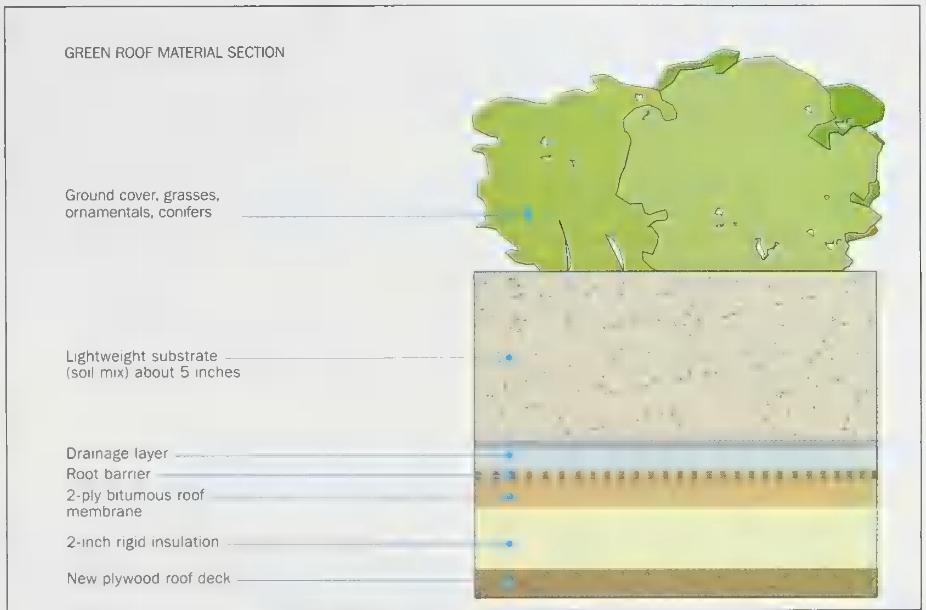
Vegetation Systems Atop Buildings Yield Multiple Environmental Benefits

ROOFING TECHNOLOGY DEVELOPED IN GERMANY IS STARTING TO TAKE ROOT IN NORTH AMERICA

By Nancy B. Solomon, AIA

With a few glorious exceptions, rooftops have played a rather unglamorous role in modern construction. The top surface of a typical building is a necessary, utilitarian component that is technically addressed during design and construction and then goes unnoticed by all but, hopefully, the maintenance crew. The horizontal surface that once defined the building's site—teeming with life and engaging in countless rejuvenating processes—is replaced by an inert, one-dimensional plane several stories in the air. Slowly but surely, owners, architects, and planners are beginning to recognize the valuable opportunities inherent in these virtually forgotten patches of real estate.

One very promising option is a green roof, a waterproof protective covering featuring a top layer of plants embedded in a growing medium. Conceptually speaking, the new vegetation replaces the ecology destroyed at grade by the building footprint. The plants can form a ruggedly simple carpet or a lusciously elaborate garden. Popular in Europe for decades, green roofs are only now beginning to sprout up in North America.


GREEN ROOF MATERIAL SECTION
Ground cover, grasses, ornamentals, conifers
Lightweight substrate (soil mix) about 5 inches
Drainage layer
Root barrier
2-ply bitumous roof membrane
2-inch rigid insulation
New plywood roof deck

A standard section through a semi-extensive green-roof system designed by Linda S. Velazquez of Alpharetta, Georgia, for an existing residential building in downtown Atlanta.

Sowing the seeds

Roof vegetation is not new. For millennia, indigenous architecture was covered with plant material—from sod to thatch. Twenty-five hundred years ago, Babylon was renowned for its hanging gardens. And, in the early 20th century, Le Corbusier extolled roof gardens in his vision of the new city.

According to Linda S. Velazquez of Alpharetta, Georgia, who publishes a green-roof Web site (www.greenroofs.com), the idea for contemporary green roofs came from medieval Iceland and Scandinavia. For inhabitants of these resource-limited regions, sod was one of very few readily available building materials.

Contributing editor Nancy B. Solomon writes about architecture and technology.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 152 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

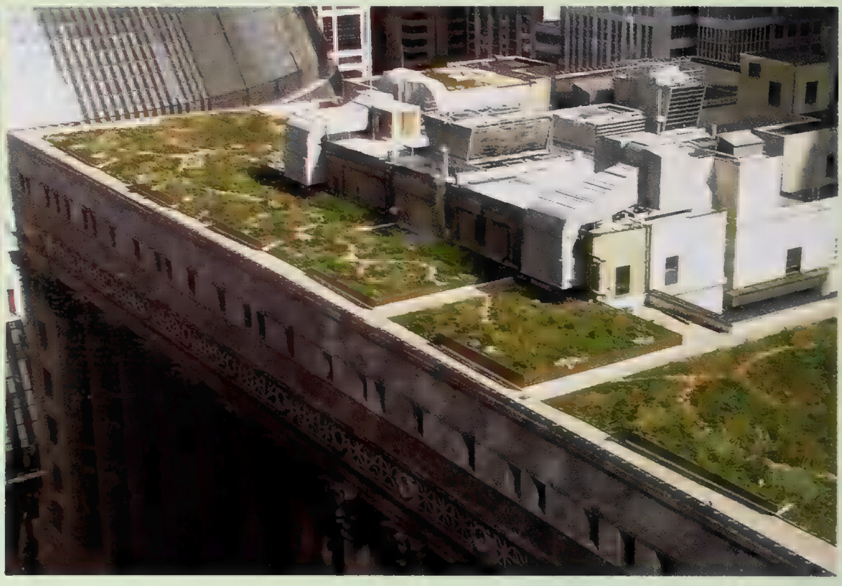
1. *Describe the components that make up a green roof.*
2. *Explain the environmental benefits of a green roof.*
3. *Identify types of plants suitable for a green roof.*

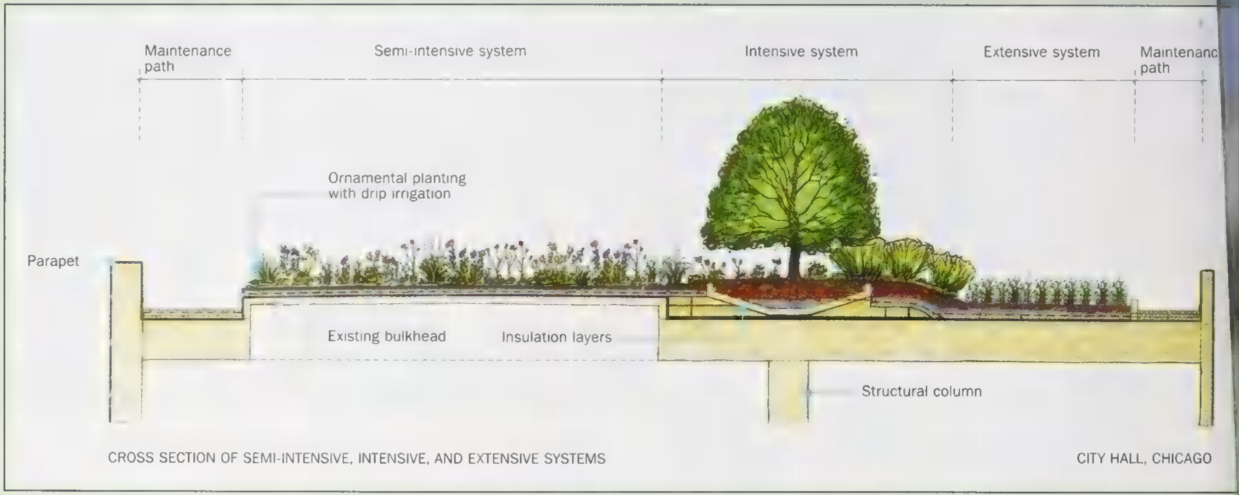
WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to ***architecturalrecord.com***.

But green-roof technology began in earnest in Germany, where, in 1971, Gerda Gollwitzer and Werner Wirsing published *Roof Areas Inhabited, Viable and Covered by Vegetation*, a book that outlined the modern green-roof concept. Today, that country essentially mandates green roofs: They are required in some jurisdictions and are offset by tax incentives in others. Fourteen percent of all rooftops in Germany have been greened, according to Steven W. Peck, president of the Cardinal Group, in Toronto. In 1999, his firm formed Green Roofs for Healthy Cities (www.greenroofs.ca), a network of public and private organizations, to promote the application of this technology in North America.

The main draw for green roofs in Germany is, undoubtedly, their environmental benefits. Top on the list is their contribution to storm-water management. In highly developed, densely populated regions, the sewer infrastructure can be overwhelmed by the amount of water that quickly flows off conventional roofs during a heavy downpour. A green roof slows down, reduces, and even cleanses storm-water runoff. "It's like having a giant sponge on the roof," says Brian Lambert, marketing manager with the Garland Company, a roofing manufacturer based in Cleveland.

This permeable surface absorbs and retains water, allowing much of it to evapotranspire, and only very slowly releasing the rest to the ground—at which point it has a chance of reaching an aquifer rather than simply disappearing down a pipe. According to an industry rule of





CROSS SECTION OF SEMI-INTENSIVE, INTENSIVE, AND EXTENSIVE SYSTEMS

CITY HALL, CHICAGO

City Hall, Chicago
The century-old City Hall (above) had been covered by a conventional ballast roof. By utilizing internal columns and adding reinforcement where the skylights once spanned, the architects were able to install three different vegetation systems (right). The pilot project (above right) includes a perimeter path, which is recommended for maintenance.

thumb, notes Roger Schickedantz, AIA, associate partner at William McDonough + Partners in Charlottesville, Virginia, a green roof with low-growing vegetation can absorb about 70 percent of the rainwater it receives. And air pollutants that often get swept up with the precipitation, including nitrogen and phosphorous, are filtered out by the vegetation before they can pollute groundwater or streams.

Another major factor is a green roof's contribution toward alleviating the heat island effect, an ever-increasing problem in major urban centers. Exposed blacktop roofs are notorious for reaching very high temperatures in the summer and raising the ambient air in the process. Plants counteract this phenomenon. In addition, vegetated roofs help moderate a building's internal temperature, purify the outside air, and provide habitats for plants, insects, and birds.

Green-roof proponents list other benefits, as well. Although more expensive up-front, green roofs may be more economical over time: Stewart Comstock, water-resources engineer at Maryland's Department of Environment, in Baltimore, estimates that, in five to seven years, operational savings in terms of energy consumption and maintenance costs will offset the construction premium associated with a simple green roof with low-growing vegetation. In addition, living roofs provide aesthetic and psychological relief to a concrete-and-asphalt urban jungle.

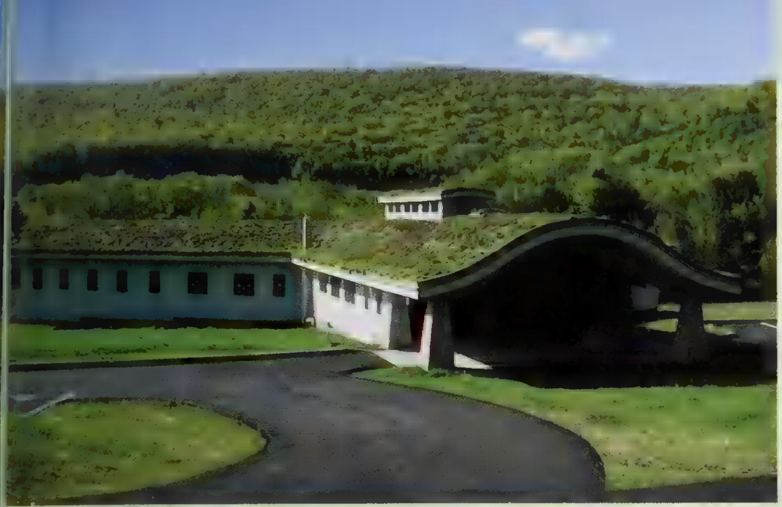
Transplanting to North America

As green-roof technology has improved and our own environmental challenges loom ever larger, government leaders and clients are slowly realizing that the benefits of a living roof can also apply on this side of the Atlantic.

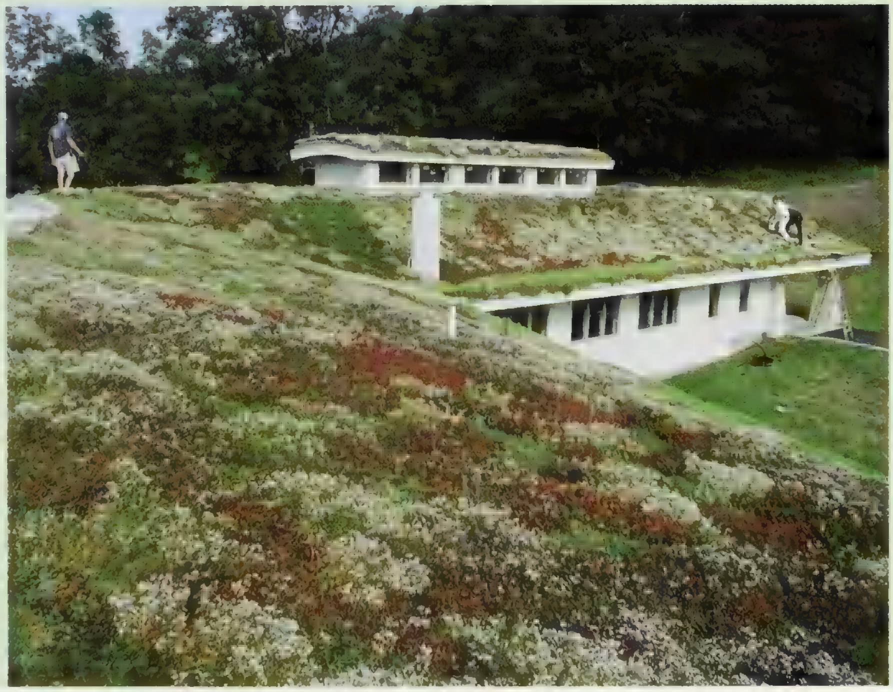
In fact, green roofs are gradually being added to the regulatory toolbox for storm-water management in the United States. Maryland's Department of Environment, for example, recommends that local jurisdictions consider it a permeable surface. Taking heed, Anne Arundel County now equates green roofs with grassy surfaces when calculating the amount of water that a new development must retain and treat, says Merrill Plait, chief engineer for the county's Office of Planning and Zoning.

With regard to the urban heat island effect, one highly visible experiment with green roofs is taking place in Chicago. Concerned about the public health threat due to the increasing summer heat differential between downtown Chicago and its outlying suburbs, Mayor Richard M. Daley encouraged the Chicago Department of Environment to look into possible solutions. This effort has resulted in a 20,300-square-foot green roof on top of Chicago's City Hall [RECORD, February 2003, page 79]. The pilot project, completed in 2001, will test various plant types and green-roof systems for this region. The design team included Weston Solutions, an environmental engineering company based in West Chester,

PHOTOGRAPHY: © STAN KOTECKI PHOTOGRA



Chiropractic Health Center, Luzerne County, Pa.
Although most often applied to flat planes, green roofs can also be installed on sloped and even curved surfaces (left two). Here, plastic lumber battens were attached at the steepest sections to prevent soil slippage. Fabric mesh held soil in place until plant roots took hold. Water drains freely, although slowly, from green roof to eave. The extensive roof was planted with a type of sedum (below). Van der Ryn Architects of Sausalito, California, designed the center.



Pennsylvania; McDonough + Partners; and Conservation Design Forum, a landscape architecture and planning firm in Elmhurst, Illinois.

Ever pragmatic, U.S. building owners are being motivated not just by environmental gains: "Longevity is one of the places where our clients see benefits," observes Russell Perry, AIA, managing partner at McDonough + Partners. To understand why, consider the three conditions that typically damage a conventional, black-membrane roof: brittleness caused by the sun's UV radiation; thermal shock due to temperature differential between top and bottom layers; and punctures resulting from pedestrian traffic or dropped tools. The vegetation and soil layers of a green roof protect the membrane from all three.

Assuming the membrane is properly installed at the beginning, it should last much longer than an exposed roof membrane. No one knows for sure, as green roofs have not been in place long enough, but some in the industry have suggested a doubling or even quadrupling of the membrane's life, thereby estimating a life expectancy of 20 to 40 years.

Anatomy of a green roof

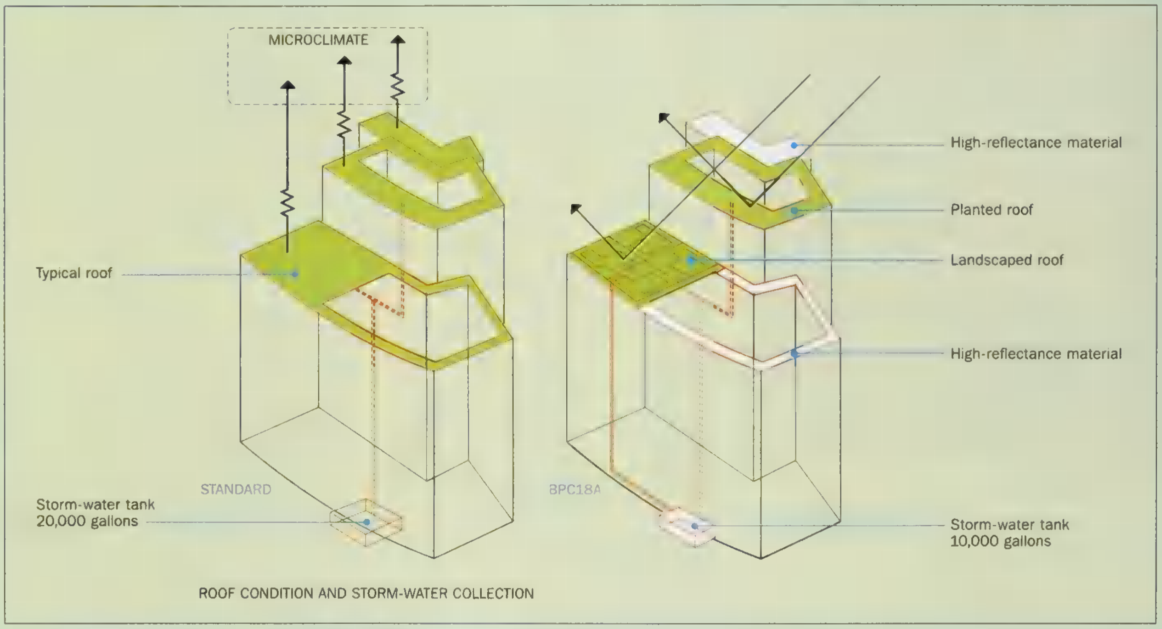
Like all roofs, the most important characteristic of a green one is its ability to keep water out of a building. It does this with several protective layers: waterproof membrane, drainage system, fabric filter, growing medium, and vegetation. Depending on the particular system and project, a layer of insulation may be installed below the membrane, a root barrier may be added above the membrane, a wind barrier may be placed above new plants, and irrigation may be installed as part of the roof system.

The waterproof membrane is the most critical layer. "Vegetation can always be replanted," says Lambert, "but you've got a big problem if the building gets a leak." After installing the membrane, he recommends waiting long enough before planting to see if there are any holes. "Do a flood test. Try to make it leak. You want to make sure the materials and labor are top-notch," he cautions. Different green-roofing companies promote different membranes—from multi-ply modified bitumen to PVC—often depending on what their sister roofing company sells for a conventional roof.

A root barrier is usually specified when tall plants or small trees are included in the landscape design. It may not be needed when low-growing vegetation with very fine hairlike roots is planted. In this latter case, however, a root barrier may still be installed to protect the membrane from larger plants that could take root if seeds migrate from other areas by birds or wind.

A drainage system is required below the soil layer to handle excess water due to very heavy precipitation. The system essentially con-

20 River Terrace, Battery Park, New York City
An intensive green roof on the 17th floor (right) and an extensive one on the 27th floor are tied to a gray-water system: Roof runoff and other building wastewater, collected in a basement cistern (diagram, below right), will irrigate the midair gardens. In a typical building (below left), roof runoff is not reused. The project was designed by the New York office of Cesar Pelli & Associates and the New York landscape and urban design firm Balmori Associates in accordance with Battery Park City Authority's *Green Residential Guidelines.*



sists of an elevated air space into which water can collect and, once it reaches a certain level, flow off the roof—typically through interior drains. As with membranes, the drainage layer varies from manufacturer to manufacturer: One, for example, relies on a plastic tray whose profile resembles an egg carton, while another installs a layer of gravel. Some drainage systems are designed so that a portion of the collected water can be saved and recycled back into the soil during arid periods. In comparing drainage systems, architects should be cognizant of how much water they can hold for how long a period, and how much they weigh. A very fine cloth filter is placed between the growing medium and drainage system so that only water can pass through.

Engineered soil and hardy plants

When it comes to living roofs, not all dirt is the same. In fact, the medium in which the vegetation is planted must be carefully engineered for the system to achieve its expected life. It would be a big mistake, for example, to install a soil that is more than 20 percent organic: "The plants will look great for the first two years, but then roof health will deteriorate because organic soil disintegrates quickly," says horticulturist Ed Snodgrass, who studies and grows green-roof plants on his family farm, Emory Knoll Farms, in Street, Maryland (www.greenroofplants.com). Again, each manufacturer offers its own special blend that considers weight, water capacity, and compaction over time.

The depth of the growing medium and species of plant distinguish the two basic types of green roofs—extensive and intensive. Extensive green-roof systems have very shallow beds, in the order of 3 to 6 inches, that support only very hardy, low-growing vegetation. These are the most practical and economical green roofs, as they are lightweight—weighing little more than a traditional ballast roof—and require little to no maintenance or irrigation.

With deeper beds, intensive systems can grow many more varieties of plants—and even small trees. They can be much more aesthetic than extensive roofs, easily lending themselves to a gardenlike atmosphere. But the additional soil and taller vegetation translate into higher roof loads, so additional structural support is often necessary. This type of roof landscape typically requires regular maintenance—including watering, fertilizing, and mowing—that adds to ongoing operation costs. And nutrients from the fertilizer, which is water soluble, can slowly make their way to local water bodies, where they can add to the ecological havoc.

A lightweight growing medium can easily be lost to the wind until stabilized by mature plants. A mesh made out of a biodegradable material, such as jute, is recommended to cover the dirt temporarily.

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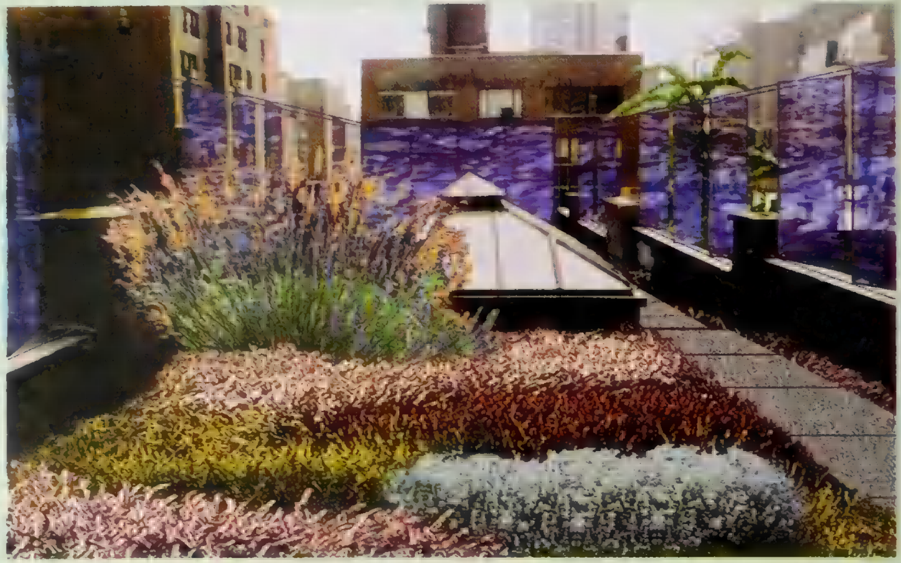

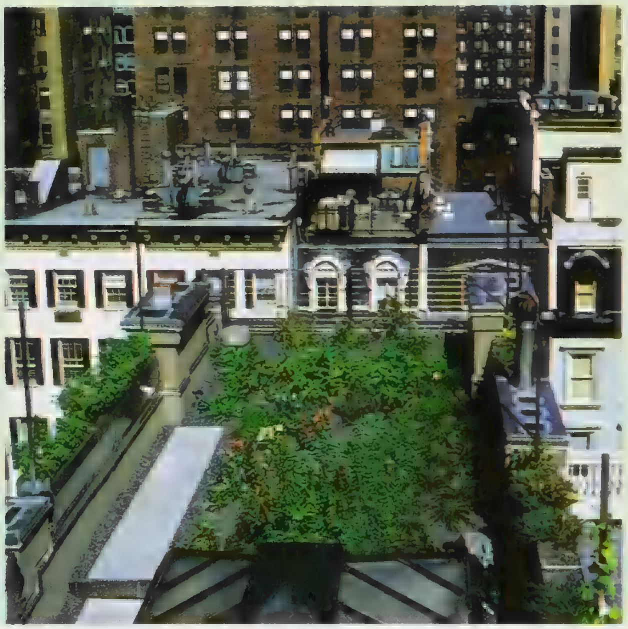

Earth Pledge Foundation, New York City
Earth Pledge Foundation, a nonprofit environmental organization based in Midtown Manhattan, promotes the construction of green roofs in New York City through its Green Roofs Initiative program. The foundation's own 600-square-foot intensive roof garden (left), used for promotional events, lunch meetings, and informal entertainment, was designed by Balmori Associates and completed in 2002. Principal Diana Balmori experimented with perforated plastic screens at the roof perimeter (above) to moderate wind. They were not installed, however, due to budget limitations.

Alternatively, in some proprietary systems the plants are grown in plastic trays or sodlike mats on grade, so that they are fairly mature and secure in the growing medium before these components are lifted into place.

Rooftops can be harsh environments. The plants that survive the best are those that have adapted to similarly harsh locations. Imagine the handful of plants you would find growing on a windswept rock outcropping high up on a mountain, scorched by intense direct sunlight in the summer, frozen by snow in the winter, and drenched by rain in the spring. "That's what you want to plant—not roses," explains Perry. Fortunately, such hardy plants can be very attractive, and they come in many different colors, not just green.

By and large, the plants that seem to fare best on U.S. roofs are the same ones promoted in Germany: succulents, with varieties of sedum being the most common. Because of their particular metabolic processes, succulents are very adept at conserving water and can therefore survive drought conditions. And, when planted in the appropriate region and soil conditions, many do not need ongoing fertilization because the nutrients from their dropped leaves are simply reused. "It's self-sustaining," observes Perry.

But conditions—in terms of temperature fluctuations, light, rain, wind, maintenance, occupant access, to name a few—do vary from roof to roof, necessitating one type of plant over another. Priorities also vary: In the U.S., for example, there is a lot of pressure to use native plants on roofs despite the fact that, according to horticulturist Snodgrass, "we don't yet have any proven natives."

Whether drought-tolerant low-growing vegetation or thirstier larger shrubs, all plants need sufficient water to get up and running. Often temporary, above-soil irrigation systems are installed for the first growing season. "It's used as an insurance policy," explains Lambert. If aesthetics is very important, a permanent irrigation system may be installed about an inch below the soil to deliver water to the roots as needed.

Plowing ahead

Today, about 10 patented green-roof systems are available from about two dozen companies in North America. Each company typically offers full service for a complete green-roof system, from membrane to plants. According to Schickedantz, however, an architect can, and often should, mix and match proprietary components to suit a project's particular needs.

Some of these companies strictly focus on green roofs; others are traditional roofing manufacturers that are adding green to their palette. In either case, the American firms have typically aligned themselves with a German green-roof manufacturer and modified the German technology to suit North American building requirements and climatic conditions.

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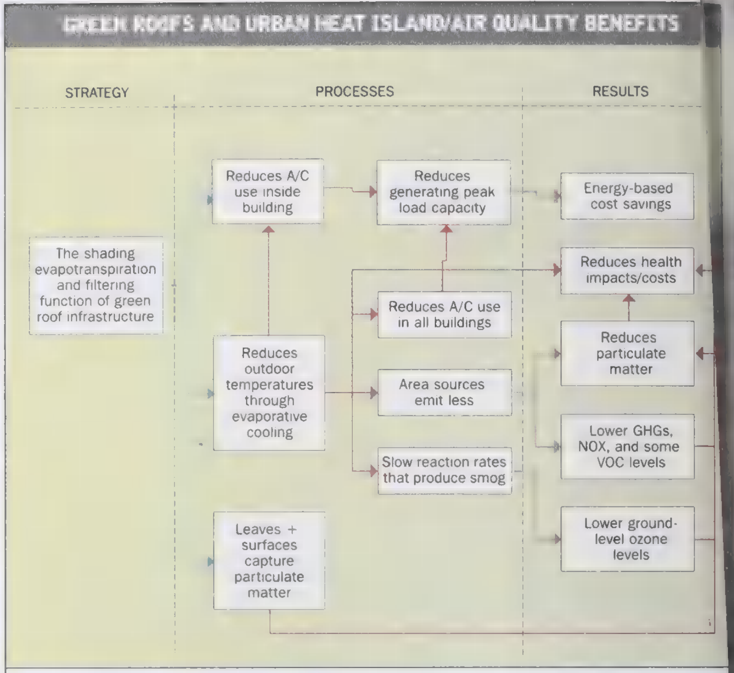
However, the jury is still out as to whether these systems have been fully adapted to our continent. And there is not yet enough hard data distilled from rigorous testing—here or, for that matter, in Germany—to show quantitatively how well green roofs succeed in their expressed goals.

Fortunately, a few researchers in academia are beginning to rectify the situation. For example, Bill Hunt, P.E. (www.bae.ncsu.edu/people/faculty/hunt), extension specialist with the biological and agricultural department at North Carolina State University in Raleigh, has set up three experimental roofs to investigate, among other factors, the speed at which water runs off both conventional and green roofs, measure how much nitrogen and phosphorus are absorbed by the systems, and determine the optimum roof slope, soil type and thickness, and plant species for the southeast United States.

Despite the various systems currently on the market, Hunt admits that there are still a lot of design questions to be answered: How thick should the soil be? What type of soil should be used? What are the best plants for quick growth? How does soil depth affect plant growth and flood reduction? "Right now it's a shotgun approach," confesses Hunt. But not for long: "Soon there will be enough data so that we can make pretty good preliminary design recommendations," he predicts.

In the meantime, to further their education, architects interested in this new technology may want to attend Greening Rooftops for Sustainable Communities: The First Annual North American Green Roof Infrastructure Conference, Awards, and Trade Show. It takes place on May 29 and 30, 2003, in Chicago and is cosponsored by The City of Chicago and Green Roofs for Healthy Cities. ■


GREEN ROOFS AND URBAN HEAT ISLAND/AIR QUALITY BENEFITS
STRATEGY
PROCESSES
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The shading evapotranspiration and filtering function of green roof infrastructure
Reduces A/C use inside building
Reduces generating peak load capacity
Energy-based cost savings
Reduces health impacts/costs
Reduces A/C use in all buildings
Reduces outdoor temperatures through evaporative cooling
Reduces particulate matter
Area sources emit less
Lower GHGs, NOX, and some VOC levels
Slow reaction rates that produce smog
Leaves + surfaces capture particulate matter
Lower ground-level ozone levels

This diagram from Green Roofs for Healthy Cities and Environment Canada indicates the multiple energy and health benefits associated with living roofs.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "Vegetation Systems Atop Buildings Yield Multiple Environmental Benefits" using the learning objectives provided.
- Complete the questions below, then fill in your answers (page 238).
- Fill out and submit the AIA/CES education reporting form (page 238) or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. Vegetation and soil protect rooftops from all except which type of damage?
a. UV radiation
b. water
c. thermal shock
d. punctures

2. The roof membrane's life expectancy changes in which way due to vegetation?
a. it lasts 5 years less
b. there is no change
c. it lasts 10 years longer
d. it is expected to last 20 or more years longer

3. The most critical layer of a green roof is which?
a. soil layer
b. waterproof membrane
c. vegetation
d. filtered drainage

4. When is a root barrier specified?
a. when tall plants are used
b. when low-growing vegetation is used
c. when the drainage system is specified
d. when the soil layer is shallow

5. A drainage system is required to handle which?
a. daily watering
b. recycled water
c. excess water
d. stored water

6. Extensive green-roof systems can be described by all except which?
a. shallow soil bed
b. requires regular maintenance
c. supports low-growing vegetation
d. lightweight

7. Intensive green-roof systems can be described by all except which?
a. gardenlike atmosphere
b. deep soil bed
c. need structural support
d. economical green roofs

8. The type of plants best suited for rooftops is which?
a. roses
b. native plants
c. succulents
d. shade-loving plants

9. The environmental benefits of green roofs include all except which?
a. storm-water management
b. cooling the ambient air
c. releasing nitrogen into the drainage water
d. providing a habitat for insects and birds

10. Green roofs are encouraged in Germany by which means?
a. some jurisdictions offset cost by tax incentives
b. required by a constitutional amendment
c. cost of plants is subsidized by government
d. labor is provided by the government

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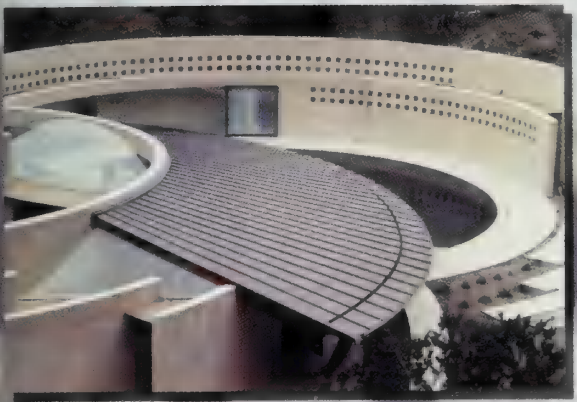
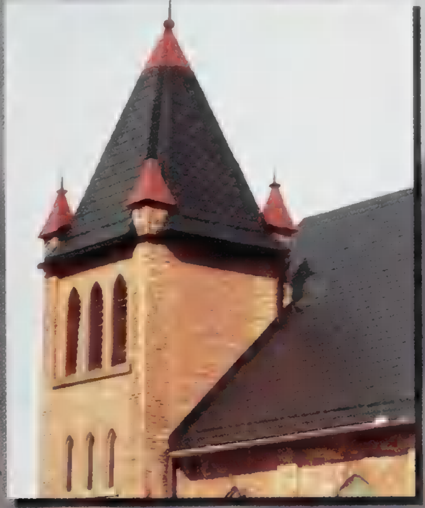


Project: Private Res. Profile: Tapered, Copper PC



Project: Trinity Church Profile: ADVANTA Shingle

Project: Sandals Resort Profile: ScanRoof

Project: Jamestown Visitor Center Profile: Field-Lok

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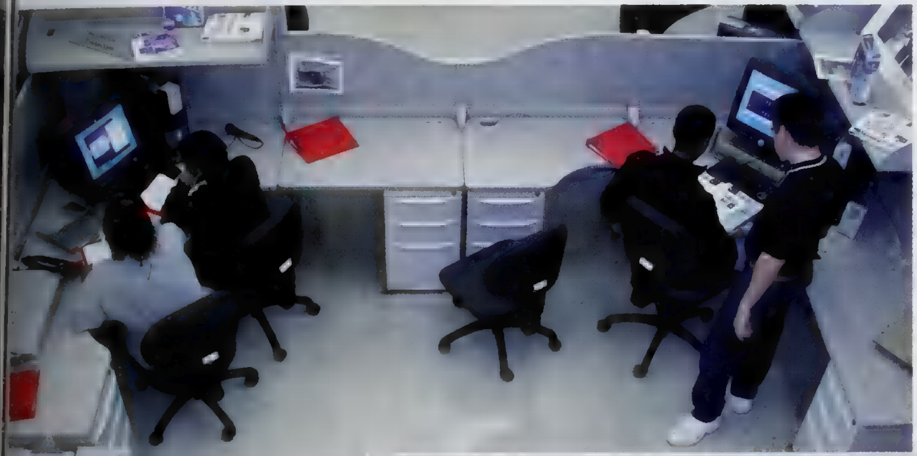

anual Arts High School
os Angeles, CA

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School Construction:

Technology Is Changing the Way Kids Learn ... And the Classrooms in Which They Do It.

Mendez Fundamental Intermediate , Santa Ana, CA

By Stephen H. Daniels

It has been nearly seven years since former U.S. Secretary of Education Richard W. Riley released the nation's first educational technology plan. That plan, which had the lofty title "Getting America's Students Ready for the 21st Century: Meeting the Technology Literacy Challenge", transformed overnight what our children learn, how they are taught, and the Internet-driven wave of change that swept over education has had tremendous impact on classroom design itself.

The classrooms for the 21st century are shaped by Internet learning.

Programs defined as technology education are replacing programs known as industrial arts in the same way that industrial arts replaced "manual arts" 30 years ago, and both curriculum and facilities are dramatically different.

"Architects who are pulling from their files, as the basis for new school plans today, blueprints from the 60s—and there are still a great number of them—are doing their clients a disservice," says one Midwest-based tech education consultant. "To accommodate the new curriculum, schools today, especially the new labs, are wildly different than anything you and I grew up with."

This continuing education piece will look at recent trends in technology education and will look briefly at how learning success can be influenced by effective design. In it, we will look at a number of technology labs, including those in which modular units replace "typical" classrooms and curriculum, and we will discuss the environments necessary to effect successful "project-based" learning.

Last year, for the third year in a row, U.S. school construction spending exceeded $20 billion—a little more than half of it in new facilities. Nearly 40 percent of the new high schools, and about 10 percent of the new middle schools, included technology labs. Of the nearly $10 billion in renovation of existing schools that was completed in 2002, a significant percentage was for converting existing industrial arts classrooms to technology education facilities.

"The philosophical change from industrial arts to technology education has involved the renaming of programs, the restructuring of courses and changes in facilities," says Kenneth S. Volk, former assistant professor with East Carolina University's Department of Business, Vocational and Technical Education, now a senior lecturer with the Hong Kong Institute of Education's Department of Engineering and Technology Studies.

Between 1970, when the first university renamed and restructured programs from industrial arts to technology education, and 1990, the number of industrial arts teachers graduating from U.S. universities declined by more than 70 percent, according to Volk, and the decline over the past decade has been even more precipitous. Volk predicts the demise of industrial education in the U.S. by year 2005.

Dr. Michael DeMiranda, a Distinguished Technology Educator (DTE) at Colorado State University, says such a prediction is unfounded. "Some form of trade

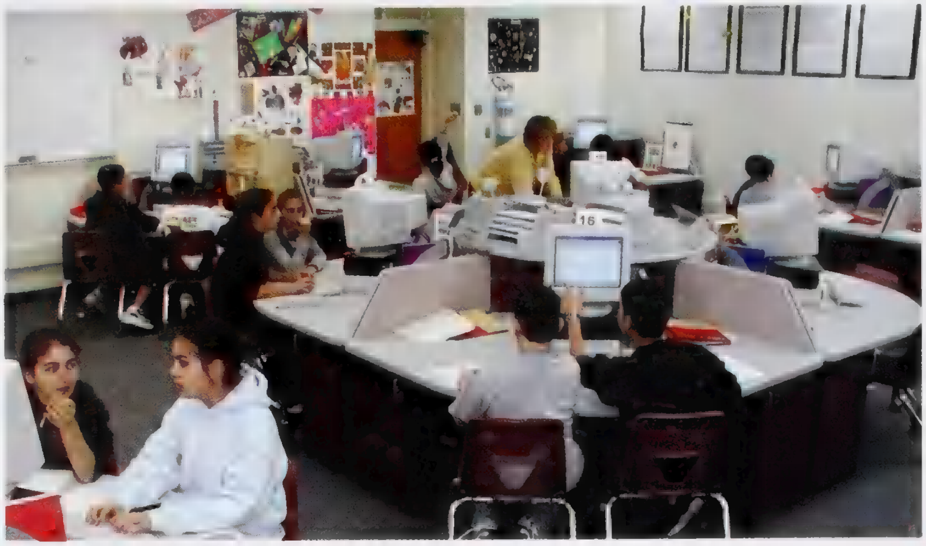
CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **School Construction: Technology Is Changing the Way Kids Learn... And the Classrooms in Which They Do It.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 163, then follow the reporting instructions on page 238 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Know the trends in technology education and its impact on future learning environments.*
- *Be aware of how the design of schools can impact the learning and how students and teachers interact.*
- *Understand ways to design a technology lab to be flexible and allow for future growth in technology and learning.*



Toll Middle School, Glendale, CA

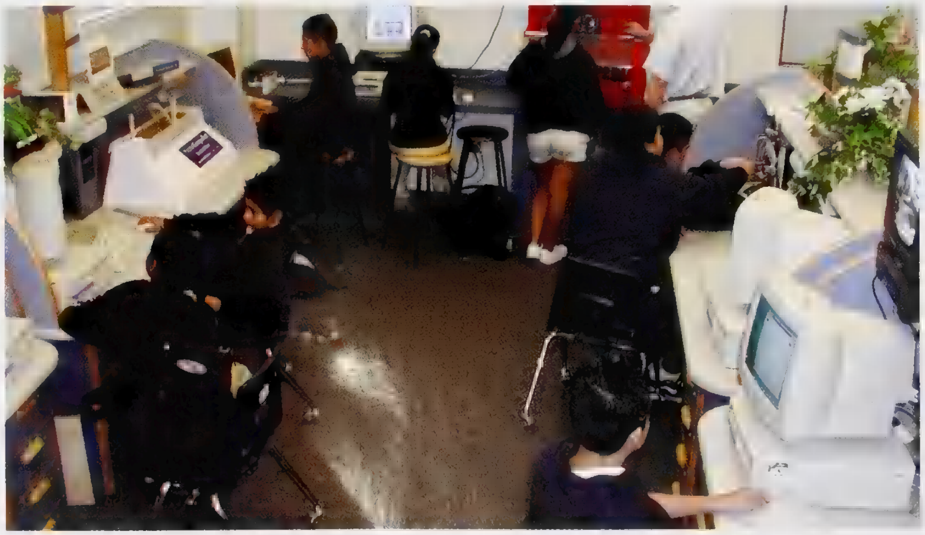
and industrial education will continue," he says. "We are not replacing anything" DeMiranda says.

"I think that is true," says another technology education industry source. "Educators are too inertia-bound to eliminate probably 30,000 (industrial arts) programs in the next two years. We have, in fact, seen a resurgence in 'shops' in the last year or so" says a supplier.

However, "thirty years ago, in California alone, there were six schools which produced 200 student teachers per year in industrial arts," says John Waltemeyer, a former industrial arts teacher who today is an educational consultant for a modular education supplier. "Today there is a single school in the state training industrial arts teachers; it produces fewer than 10 graduates a year, and less than half go into teaching," says Waltemeyer.

High school and middle school administrators and industrial arts teachers interviewed for this article say this trend is apparent: as current industrial arts teachers retire, their shops are closing and being converted to other uses.

In their place, with increasing frequency, are modular learning programs, developed by outside equipment suppliers who once served the industrial arts marketplace. In place of wood shop—often in the same facility that once housed a school's wood shop—are modular technology classes that engage an increasingly cross-gender student group in such subjects as alternative energy, architectural design, bioengineering, communications technology, construction technology, digital electronics, environmental technology, manufacturing technology, materials science, multimedia production, robotics and automation, and transportation technology.



Mendez Fundamental Intermediate School, Santa Ana, CA

The modular learning programs come with a new tool and facility demands, all their own—wind tunnels, race trac stress-testing apparatus for engineering modules, a six-ft.-lo apparatus for experiments that teach the principles of magn ic levitation. A construction technology program is accompanied by a four-sided light box that demonstrates the heat tra mission values of four different window glass combinations, including a low-e sandwich. Students use the equipment to gain hands-on experience with real-world materials and gain an understanding of real-world alternatives.

Technology education's hardware and activities have been incorporated into other disciplines. Math and science teachers ar now using robotics, CAD and modular hardware typically found in technology education in order to provide concrete application to their lessons. English classes, now often called "communicatio incorporate video production, desktop publishing, and other "tools" found in technology education's communication cluster.

New Learning Methods Demand New Classroom Concepts

"Young people in a modular learning environment work on projects together," says a supplier. "They look at problems from every angle. They brainstorm possible solutions. They come up with a plan, test a model, keep the parts of that model that work and eventually write a narrative about their experience. They learn how the physical world really works in an environment that closely resembles the real working world." And they do it, increasingly, in classrooms without desks.

Educators are still grappling with the notion of technology education and how best to achieve "technological literacy" in the U.S., and designers are attempting to provide answers to high-profile problems to school boards which sometimes don't even know the questions.

Digital content and networked applications are transforming education, say Department of Education officials. That transformation is increasing the private sector stake in public education. Increasingly, not only the tools of the technological transformation—computers and LANs and WANs (local and wide-area networks), but the curriculum itself, come from outside the traditional educational community.

The tech lab affords the architect and the school board a unique opportunity to design a space that ensures a "powerful" learning experience, says a technology supplier. But what does that space look like?

"When it comes to specifying classroom equipment, most architects know what goes in a biology lab, but most have never been in a tech lab, and they need to know more about it. That's where we come in."

One technology education supplier operates four regional learning centers where both teachers and designers engage in seminars to understand the new technology and its accompanying curriculum. Between five and 10 percent of that audience is architects. "For most, it is an epiphany," says a spokesperson. "They tell us, 'I had no idea that was going on.'"

At the 4,000-student Manual Arts High School in downtown Los Angeles, the third-oldest school in the city, once 90 percent African-American, now 80 percent Hispanic (more than half Manual Arts student body lists Spanish as its first language), 11th-grader Ernesto Smith was quietly busy with two other students—both female—at a workstation in a corner of a converted metal shop.

The students were constructing a working model of a maglev train, the first real-world version of which is to be unveiled by the Chinese this spring—a $1.1 billion, 36-mile system connecting Shanghai and Pudong. Incredibly, Smith and his classmates, understand the principle involved in the construction of a noiseless, frictionless rail project. Smith says of the process by which he gained that understanding "this is fun!"

Advertising supplement provided by **Paxton / Patterson.**

Rosemont Middle School, Glendale, CA

Girls in industrial arts class? Education is undergoing a revolution, so is classroom design. As the goals of education change to reflect the new educational needs of our society, so, say both educators and designers, do the strategies for technology integration. The new credo of federal educators is that it is essential to prepare students with critical thinking skills—to give them problem-solving strategies more in tune with a complex world.

One of the criticisms of modular, vendor-supplied curriculum is that mousetrap and CO_2-powered vehicles, which all vendors seem to include as part of middle school curriculum, while fun, are of limited educational value. In the case of the more reliable of the modular vendors, however, curriculum is created by educators, or former educators, based on technology standards set by federal, state, and in some cases local jurisdictions.

One of the architectural modules widely installed in U.S. classrooms has students exploring architectural history and comparing architectural styles on Day One of a 20-day program. On Day Two, students are doing simple sketches, mimicking what they have seen the day before. By Day Three, students are interviewing clients and doing preliminary site plans, and by Day Four, they are doing conceptual models and drawing sections and elevations of simple plans. Eventually they will create 3-D models, consider the effects of the sun on a building and environmental site issues. They will design a transit center, have an introduction to AutoCAD, and, at the end, make a presentation to a "client" of a design problem of their choosing. All the while, they have recorded lessons learned in an electronic journal.

Educators refer to two very different teaching theories: directed instruction—lectures, worksheets and tests with specific expected responses; and what is sometimes called constructivist teaching, which focuses on learning through problem-solving and stresses group work in place of individual performance. It is critical that architects understand the distinction, because the classrooms for each are very different. Small classrooms with rows of desks, maybe 30 of them, will suffice for the former.

Clusters, not Rows; Tables, not Desks

But tables are replacing rows of desks in many contemporary classrooms. Display and storage areas are being added, and learning centers are being introduced. These design features are the outgrowth of a growing emphasis on project-based learning. This project-based approach to learning establishes collaborative technology learning environments, or "collaboratories," that enable project-enhanced science/technology learning. Tables provide space for students to work together in either large, or small, groups. Display areas enable teachers and students to exhibit projects, and storage areas give students a place to house their "works in progress." Learning centers provide the opportunity for self-directed learning.

In some states—Virginia is one—traditional desks have been replaced by tables in more than one-quarter of all elementary classrooms, Nine of ten Virginia elementary schools have student work stations in their classrooms and 70 percent have special rooms for tutorials and small groups of students. Because contemporary teaching often crosses traditional academic disciplinary lines, many classrooms also now have moveable walls to accommodate student groups that may combine more than one class. One fifth of all Virginia elementary schools and half the state's middle schools incorporate moveable walls as part of school design.

"More traditional arrangements are being replaced gradually by nontraditional organization of classrooms," says a recent report on design features in Virginia's public schools. "Elementary and middle school classrooms organized by grade-level and high school classrooms organized by academic discipline are changing to include thematic, interdisciplinary, and family clusters."

In each of the three years since 2000, according to the U.S. Department of Education, U.S. new school construction totaled more than $20 billion. The $20.34 billion in new construction in 2000 was the highest in history, and in each of the years since 2000, slightly more than half total school construction spending was on new facilities.

It is interesting to note the elements of that new construction, the extent to which industrial technology and vocational shops were a part of new school designs and the degree of technology support that went into new facilities. The numbers reflect the trend toward advanced technology education.

At the high school level, 35.7 percent of new schools included facilities for industrial technology classes; 26.8 percent included vocational shops. Just over nine percent of all new middle schools included industrial tech facilities; 3.1 percent, vocational shops. Nearly all—98.2 percent—of the high schools under construction in 2002 were supported by local area networks. Nearly 97 percent included fiber optics or cable. At the middle school level, 96.9 percent of all new facilities in 2002 included LANs; 98.4 percent, fiber optics or cable.

All This is New, Say Architects

In an effort to improve high school science, math, and technology education teaching and learning, the National Science Foundation sponsored a planning study, the objective of which was to develop criteria, standards, and a process for programming and planning prototype laboratories and support spaces for secondary school instruction. The results of that planning study can be found at www.labplan.com.

Badger High School, Lake Geneva, WI

Manual Arts High School , Los Angeles, CA

Architects with experience in technology lab design, and award-winners in new high school design were asked these questions:

1. How will the teaching spaces for math, science, computer science, and technology education be different in the next decade?
2. How can the architectural design ensure flexibility for future programmatic change?
3. Is there a preferred or ideal process for interacting with school representatives to ensure that the design and resulting facility will support current and future programs and pedagogy?

The responses in full, and the sources of the remarks can be viewed in the required reading for this continuing education section. (Instructions are at the end of this section.) In brief, however, the responses were these:

- we will be seeing more and more industrial technology shops converting to clean technology labs, reducing the need for large machinery and the traditional shop setting.
- schools, once designed as spaces for "passive" learning are changing to meet new demands, and learning spaces must now support a wide variety of learning activities and environments.
- flexibility is a key factor in tech lab design, and classrooms, in most cases, must be larger to accommodate computers and spaced for team-learning.
- furniture must be appropriate for technology integration. The old desk-chair combination will not accommodate the personal computer.
- expensive science "wet labs" are being reduced in number. They are being replaced by "virtual reality" stations in which the computer replaces hands-on experimentation.
- interior bearing walls with small-span columns are an impediment to flexible classroom design; mechanical, electrical and plumbing systems must be flexible enough to permit walls to move to accommodate combined classes and accommodate growth and future program changes, infrastructure must be fluid; cable trays and all technology routes must be accessible.
- redundancy in design of mechanical, electrical and plumbing equipment is critical, spaces must be adaptable to any use.

Space is a critical issue in technology education lab planning, as is the problem of maintaining a line-of-sight between teacher and students. "We often find ourselves trying to put a size-12 foot into a size-nine shoe," says Waltemeyer. "If I am building a tech lab, the ideal space is open, with the modules against the walls. We find architects frequently trying to create tech labs within a space defined by the traditional classroom—a space of about 900 sq ft. The ideal tech lab space is at least twice that, or even 2,400 sq. ft."

At the Mendez Fundamental Intermediate School in Santa Ana, Calif., former science teacher David C. Greenwald now teaches technology in a room that was originally designed for a shop class. Because the education modules, each with its own 19-in.computer monitor, are arranged "traditionally," in rows across the room as desks might have been arranged, and because Greenwald operates from one end of the room, students are lost behi their computers.

"Keeping everyone on task in the computer classroom a challenge," he says. To solve the problem, Greenwald has installed roughly a dozen TV monitors throughout the roo and can, thus, watch his students at work. The exercise, he admi is a little like monitoring a department store security system but despite classroom limitations he is enthusiastic about m dular education: "Because of the nature of the lab, students are exceptionally motivated, and, he says, they are, therefore suc ssful at advanced levels of learning." This, says Greenwald, "is finitely the most challenging course my students have ever attempted, but it is also the most rewarding."

The Front of the Classroom is Where?

"When we ask teachers 'Where is the front of your classroom the answer is 'there really isn't one anymore,'" says one archit t.

Ideally, says Diedre Weber, a home economics teacher at Eleanor J. Toll Middle School in Glendale, Calif., who for a ye -and-a-half has taught a modular education class called Family Consumer Sc ences in a converted sewing classroom and who is now working with local architects on a wholesale renovation of the 75-year-old school, the teacher's ation should be in the center of the classroom, and it should be slightly elevat to maintain a line-of-sight between students and teacher.

A frequent problem, say tech education designers, is getting teachers, the selves, to think beyond traditional classroom settings. At Walnut High Schoo in Cincinnati, Ohio, teachers were asked to contribute to scoping process for a recently completed Arts & Science center that would house the school's con puter science labs. "Getting the staff to think beyond the basics, like science la with working sinks and running water was a challenge," says Deborah Heldm , executive director of the school's alumni association. "Some wanted enough outlets to plug in extension cords. In a $10.5 million building, we weren't goin to have extension cords," Heldman says.

Education consultants like Waltemeyer most often work directly with schoo districts, but also host training sessions for teachers, administrators and architects, at which Waltemeyer says, designers can network with prospective clients.

It is essential, says Waltemeyer, that the school's vision of its tech lab be cle before construction drawings begin. "Change orders become expensive," he say The complexity and often heavy mechanical/electrical demands of tech education classrooms make mid-construction changes even more costly.

While much remains to be learned—and debated, this much is clear, say those working on the cutting edge of technology education reform: the overwhelming advances made by e-business have made e-learning—computer networks, multimedia, content portals, search engines, electronic libraries and web-enabled classrooms—an integral part of the 21st Century classroom. The reform is forcing us to rethink the purpose and the architecture of our educational infrastructures in very fundamental ways. ■

For further background, readers are referred to the websites of the following organizations: the International Society for Technology in Education (ISTE), International Technology Education Association (ITEA), National Clearinghouse for Educational Facilities (NCEF), National Center for Educational Statistics (NCES), the National Educational Technology Standards Project (NETS) and the U.S. Department of Education's Office of Educational Technology (OET). Also of interest to classroom architects is the November 2002 report by the U.S. Department of Education's Office of Educational Research and Improvement: "Technology in Schools," which offers tools and guidelines for assessing technology in elementary and secondary schools. It may be found at http://nces.ed.gov/pubs2003/2003313.pdf.

Click For Additional Required Reading

As part of the required material for this CES section, please read the architects' comments section of the National Science Foundation planning study. To access the material online, go to **archrecord.construction.com/resources/conteduc.** To request a faxed copy, contact Bonnie Grzelinski at (800) 323-8484 ext. 202, or email bgrzelinski@paxpat.com.

LEARNING OBJECTIVES

- Know the trends in technology education and its impact on future learning environments.
- Be aware of how the design of schools can impact the learning and how students and teachers interact.
- Understand ways to design a technology lab to be flexible and allow for future growth in technology and learning.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 238. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Last year, for the third year in a row, U.S. school construction spending exceeded:
A: a. $120 million
b. $10 billion
c. $20 BILLION
d. $25 billion

Q: 2. How much of the annual spending on U.S. school construction last year was in renovation of existing schools?
A: a. nearly one third
b. a little less than half
c. a little more than half
d. more than three fourths

Q: 3. Which of the two teaching theories focuses on learning through problem-solving and stresses group work in place of individual performance?
A: a. Directed instruction
b. Constructivist

Q: 4. The current model of small classrooms with rows of 30 desks would work for which style of teaching?
A: a. Directed Instruction
b. Constructivist

Q: 5. What percentage of high schools under construction in 2002 were supported by local area networks?
A: a. 78.2%
b. 88.2%
c. 98.2%

Q: 6. Redundancy in design of mechanical, electrical, and plumbing equipment is critical.
A: a. True
b. False

Q: 7. An ideal tech lab space is which in comparison to current traditional classroom sizes?
A: a. Small than
b. Same size
c. Larger than

Q: 8. Learning spaces of the future are being designed for one specific subject or activity per classroom.
A: a. True
b. False

Q: 9. The trend in classrooms is working in small groups.
A: a. True
b. False

Q: 10. All but which would allow for flexibility in a learning lab design?
A: a. Electrical lighting on whips
b. Speakers in the ceiling and zoned
c. Accessible cable trays
d. Small span columns

Belmont High School, Los Angeles, CA

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DOMCO TARKETT COMMERCIAL PRESENTS

Resilient Flooring Design Options

Resilient Flooring can mimic nature, reduce sound and static. With it, we can create limitless patterns that burst with contemporary color and energy, that pture the imagination and command attention. Tinkering with traditional ecipes," manufacturers have created new product lines of heightened durability and ease of maintenance. New products and processes can help you qualify for Leadership in Energy & Environmental Design (LEED) credits. And—look—linoleum is back!

In this continuing education section, we will evaluate tile vs. sheet flooring, look at the product selection criteria for a range of flooring types and look at the characteristics of a range of both tile and sheet products available to commercial designers.

Tile gives the designer the ability to make many different "modular" designs; sheet flooring lends itself more easily to circular patterns. The "binder" in resilient flooring is, in the case of nearly all commercial flooring, vinyl.

As a general rule, the higher the vinyl content, the better the general performance—and the higher the cost. Vinyl composition tile (VCT) is more easily, less expensively installed and more easily repaired, but requires more routine maintenance. With VCT, designers can create a harder, denser surface than is generally available with sheet flooring.

Sheet flooring offers a seamless application for critical environments. Relatively recently developed vinyl-enhanced tile (on the market for about the past three years) gives designers the option of a 16-in.X 16-in. tile, nearly 80 percent larger than traditional 12-in X 12-in tile, reducing cost and enhancing performance.

Additives and Stabilizers: More "Meat in the Meatloaf"

Depending on the "recipe" selected to combine vinyl resin with selected additives and stabilizers, vinyl can be made flexible enough for wallcovering, rigid enough for pipe, can have nearly any texture or pattern, and can be made clear or in virtually any color. Vinyl's durability, resistance to the elements and fire performance all can be affected by additives or stabilizers.

The major components of resilient flooring are vinyl and fillers, like limestone or clay for rigidity. Plasticizers, stabilizers and pigments are secondary components. In general, higher vinyl content increases resilience and long-term wear increases a flooring material's resistance to indentation and its flexibility.

Vinyl by itself, without any filler, is inherently unstable. All products require some degree of filler and can require special adhesives or heat welding. In some

NTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Resilient Flooring Design Options** To earn one AIA/CES arning Unit, including one hour of health safety lfare credit, answer the questions on page 169, n follow the reporting instructions on page 240 go to the Continuing Education section on *hrecord.construction.com* and follow the porting instructions.

ARNING OBJECTIVES

er reading this article, you should be able to:

- *Determine the design and performance criteria for selecting resilient flooring.*
- *Understand the aesthetic and performance characteristics of tile vs. sheet flooring.*
- *Develop a comprehensive overview of available resilient floor products.*

applications, like cleanrooms, where particulates are a problem, high-vinyl content flooring is a perfect solution.

"I use vinyl in virtually every project we do," says Erin Rindal, interior designer for Bassetti Architects, Seattle. "It's about durability and cleanability. Advances in vinyl means you can use products in locations and ways you couldn't in the past. In general, it is thicker, more durable than it once was."

"And there are a lot more options now," Rindal says, "sound absorbing vinyls, for instance, are ideal for school corridors; we use welded sheet vinyl in nurses stations and training rooms."

Design Considerations

Many factors should be taken into consideration when determining which flooring material to select for a specific application. There is a broad range of floor coverings, each with specific performance characteristics for various applications.

"Designers must look first at the entire building environment," says the product manager for a Texas-based manufacturer. "The architect must know his client and the environment for which he is designing."

"Some flooring performs better in certain locations than others," he says. Solid vinyl requiring buff maintenance, for instance, may not be the best choice for entryways where road salt, sand, and oils may be tracked. There, a more durable finish, which will require less frequent maintenance, is required to stand up to the wear-and-tear.

When looking at slip-resistant floors, designers need to look at those that offer the best performance along with ease of maintenance. A high coefficient of friction (COF) should not be the only factor in high-traffic areas that may require high maintenance because of the general nature of slip-resistant products. As a general rule, the higher the COF, the more maintenance the floor will require.

Designers must consider these performance characteristics when specifying resilient flooring:

Design flexibility. Vinyl sheet flooring and tile are available in myriad styles and colors. Vinyl tile is available in shapes that can be custom cut and laid out in patterns using different colors or finishes. Tiles can be arranged to depict a corporate logo or to guide traffic in a hospital or retail setting. Resilient flooring's diverse product options allow for easy transition between marble, wood and stone visuals due to the similar, if not identical, gauges available. This consistent gauge profile eliminates the need for depressed slabs or alteration of door or cabinet heights in remodels, It allows for a more seamless transition between floorcoverings of almost any type.

Usage. Designers must look at both aesthetics and safety and be aware of traffic patterns that will determine the best characteristics of the flooring. The flooring may need to support static loads or the movement of vehicles. Moisture resistance may be a critical factor, or resistance to fading.

Resilience. Vinyl flooring reduces noise and provides comfort underfoot. Unlike such hard surfaces as wood, laminate, terrazzo or ceramic tile, vinyl floors have "give" and thus are referred to as "resilient" flooring.

Solid Vinyl Tile provides maximum resistance to indentation and stain resistance, making it ideal for high traffic areas such as post offices.

Durability. Vinyl flooring is durable and time-tested, maintaining its beauty under heavy foot traffic and use. It is moisture, chemical and stain resistant, so spills can be easily removed. When compared with alternative materials, vinyl offers an attractive installed cost with economical maintenance over the life of the floor.

Safety features. A wide range of both tile and sheet vinyl floors is available with enhanced slip-retardant surfaces suitable for a variety of commercial and institutional applications.

Moisture resistance. May be critical depending on the type of subfloor, since moisture conditions may affect adhesive performance. In most cases, resilient floors may be installed in areas where water might be spilled on the floor, providing the correct adhesive is used and the floor has a minimum number of seams.

Stain resistance. Will vary by product and manufacturer. Special formulations are available for use in areas where exposure to chemicals and staining reagents is likely to occur. In general, vinyl floors are resistant to alkalis, acids, alcohols, oils, greases and aliphatic hydrocarbons. Ketones, esters and chlorinated and aromatic hydrocarbons may cause softening.

Light reflectivity. Light reflectance data is published by manufacturers. In general, when looking to accentuate natural lighting, lighter colored flooring is recommended. Light reflectance is a measure of the percentage of light reflected off a surface. The Illuminating Engineering Society of North America recommends that floors have a reflectance factor of 20-40 percent in offices, 30-50 percent in educational facilities, 20-30 percent in hospital operating rooms, and greater than 20 percent in industrial settings.

Sound Insulation. Of special importance in areas with heavy floor traffic. Resilient flooring, in general, will cushion impacts and thereby reduce traffic noise or noise from dropped objects more than other hard-surface floors such as wood, marble, ceramic or concrete. In addition, underlayments are available to further reduce impact noise and sound transmission.

Fire retardance and heat performance. Most resilient floors are manufactured to be safe from normal fire hazards. In large-scale experiments that have been run to simulate actual fire conditions, vinyl flooring products have not been significant contributors to the spread of the fire or resulting hazards. In fact, vinyl flooring resists burning and typically does not continue burning when an external flame is removed. However, a resilient floor surface can be permanently damaged or scarred by burning cigarettes, matches or very hot items.

Cost. Vinyl is a cost-effective flooring material both in initial and lifecycle cost. Vinyl lasts considerably longer than carpet and can, therefore, save money on repairs and replacement and vinyl flooring typically costs less than other hard-surface floors. Typically, commercial vinyl floor tile has an installed cost of from $1.25 to solid vinyl at $8.70 per square foot, depending on the thickness and pattern. Commercial sheet vinyl has an approximate installed cost of $2.64 to $6.00 per square foot, compared to square-foot cost of $3.84 for wood parquet flooring (oak, standard, $^{5}/_{16}$" thick, not including finish); $7.00 for ceramic tile (natural clay, thin set); and $7.75 for terrazzo (1-$^{3}/_{4}$" thick, bonded to cement). Commercial grade carpet ranges from $18.20 per square yard/$2.02 per square foot (nylon, level loop, 26 oz., light to medium traffic) to $70.00 per square yard/$7.77 per square foot (patterned wool, 48 oz. heavy traffic).

Maintenance requirements. Overall, vinyl is tough, resistant to scratching, scuffing, staining, indentation and other daily abuse. This durability is especially critical in commercial settings where routine wear and tear take a toll on floors.

The thickness of a vinyl floor's wearlayer is an important element in determining its performance and ease of maintenance. The thickness is generally measured in mils, or thousandths of an inch. Higher-quality vinyl floors may also utilize a urethane wearlayer, while lower-priced floors generally feature a vinyl wearlayer to protect the underlying pattern. In general, a urethane wearlayer makes the floor easier to clean and more stain-resistant.

Looking at the Specs

Designers looking at flooring spec for the first time may find the nomenclature mysterious. Let's demystify it. A typical commercial vinyl flooring spec reads something like this:

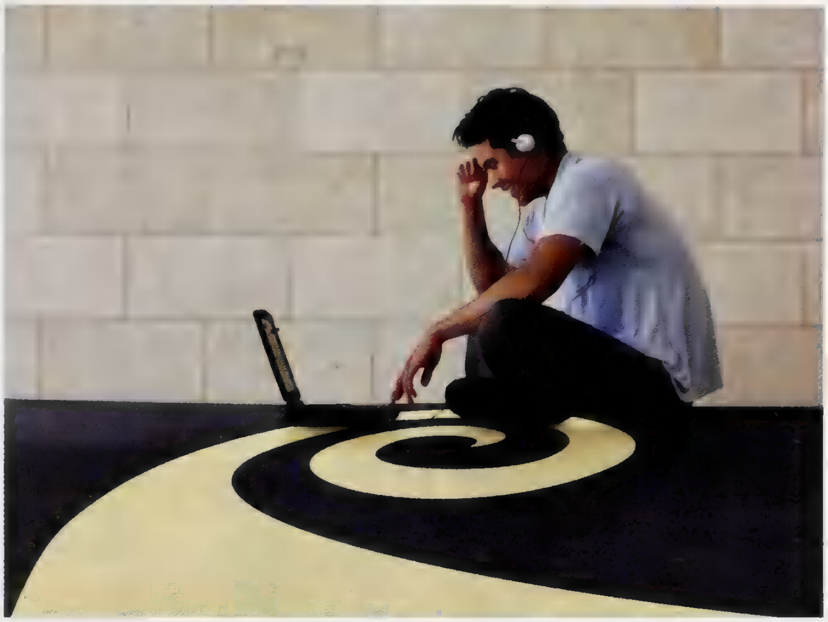
> Type: ASTM F 1066-99, Composition 1, non-asbestos formulated; 12 inch by 12 inch; 1/8 [3/32] inch gage; minimum .45 CRF per ASTM E 648; maximum smoke density of less than 450 per ASTM E 662; static load limit of 125 psi or higher; minimum slip resistance rating per ASTM D 2047.

ASTM F 1066-99 (the final figure refers to the most recent standard update, in this case in 1999) is the American Society for Testing and Materials standard for most vinyl flooring.

Composition 1, or Class 1, means that the surface pattern of the flooring runs through the entire thickness of the product. By federal law, vinyl flooring can no longer contain asbestos. No one manufactures a product in the U.S. that does contain asbestos, and you cannot buy one, but specifications still contain the caveat.

Minimum .45 CRF refers to the "critical radiant flux" (CRF) of the flooring surface, and ASTM E 648 refers to the testing procedure for CRF.

Maximum smoke density of less than 450 is the ASTM spec every manufacturer must meet to govern the volume of smoke generated by the flooring in a fire.



As shown above, Linoleum is a tremendously versatile product that lends to imaginative designs.

Static load limit is usually measured by ASTM F 970. In recent years, several modified versions of ASTM F 970 have been created to provide a broad range of static indentation performance. Higher ratings should be expected from enhanced or solid vinyl tile. When comparing psi ratings, be sure identical tests were conducted, i.e. how was the standard test method changed. To accommodate equipment such as motorized beds in hospital rooms, designers most often turn to a "homogeneous" flooring product.

The Manufacturing Process

All vinyl products are made from combinations of vinyl resin and various additives that give these products their particular properties. The additives commonly used in vinyl flooring include:

Plasticizers, oily liquids that are used to soften the vinyl and provide flexibility to the formula.

Stabilizers, used to minimize degradation and discoloration from heat and light.

Pigments, which are added during the manufacturing process to give vinyl a range of colors.

Fillers, such as limestone or clay.

Processing/fabricating. Once additives have been combined with resin, the resulting material is called vinyl compound, and is in pellet form. The nature of the vinyl compound allows versatility in the production process, enabling manufacturers to meet many of the performance requirements of various flooring applications. In the next stage of manufacturing, either vinyl tile or sheet vinyl flooring is created.

Vinyl tile is manufactured by one of two methods: either by melt-compounding the ingredients at high temperatures, then molding the hot material into the desired shape, or through a "calendering" process by which components are mixed together then fed through a series of rollers that gradually squeeze the material to a desired gauge. Finished sheets are most commonly 1/8-in. thick, but are also made 1/16 or 3/32-in. thick.

Although the total process and product raw materials will vary depending on the type of tile being produced, solid vinyl tile and printed vinyl tiles in general contain a much higher content of vinyl and less filler than vinyl composition tile (VCT).

Sheet vinyl is produced by a variety of methods that may include printing, inlaid chips or liquid coatings that may or may not be on a carrier sheet. This may or may not produce a multi-layered construction. Most product is then cured in an oven and may or may not be coated with a thin film of urethane or other specialty topcoats, including acrylics, paste layers, or chips.

Patterns are applied to some sheet vinyl flooring using a rotogravure printing method, in which colors and patterns are printed on the surface of the base layer, or through an inlaid method, in which the design goes all the way to the backing. With rotogravure, a rotating cylinder prints colored inks on top of the core layer, offering virtually unlimited possibilities in patterns and designs. The printed pattern is covered with a clear vinyl wear layer and the product is oven-cured. In the inlaid process, solid-colored vinyl chips are laid on top of a carrier sheet and then bonded together, under heat and pressure, creating the resulting pattern.

Specifying Tile Types

Three general types of tile are distinguished by their vinyl content, the percentage of which determines the product's resistance to long-term wear, its abrasion resistance, its ability to resist indentation, and its flexibility---its ability to compensate for minor substrate movement.

Two further tile subsets provide a broader range of aesthetic options: luxury vinyl tile and premium vinyl composition tile provide designers with an expanded range of aesthetic options. In addition, tile may be modified to increase both static control and slip resistance.

Vinyl composition tile is the industry standard for most commercial applications. In fact, VCT accounts for roughly 80 percent of all installed resilient flooring. In general, it is the lowest cost material available and the lowest installation cost. Although VCT may be maintenance intensive, it is highly durable, is noted for its long life and is, therefore, the most highly specified flooring material for low initial budget projects like schools and retail spaces.

VCT is distinguished by its high limestone content---the product is generally speaking 85 percent limestone, and is augmented with vinyl resin, plasticizers, stabilizers and pigments that make VCT available in an extraordinarily broad range of colors. It is a "modular" product, generally sold in one-eighth-in.-thick, 12-in.X 12-in. squares. Modular installation, as opposed to sheet flooring, makes it easy to replace damaged tiles, and vinyl composition tile conforms to ASTM F-1066.

Premium vinyl composition tile has similar properties to traditional VCT. It, too, conforms to ASTM F-1066, but is available in a broader range of chips and sizes, can be non-directional as well as directional and costs slightly more than traditional VCT. Common applications for premium VCT are in retail and education settings, but it is also more widely seen in healthcare and corporate settings.

Vinyl enhanced tile (VET) is distinguished by its higher binder (vinyl) content—generally between 16 and 33 percent. It offers the advantage of greater resilience, longer wear, improved abrasion characteristics, and is available in larger tiles than traditional VCT, 16-in. by 16-in. It is slightly more expensive than traditional VCT, say manufacturers, but offers the advantage of lower installation cost, and vinyl enhanced tile frequently includes a special topcoat that minimizes maintenance costs. VET is commonly found in public areas, and is widely used in schools, healthcare settings and retail spaces as well. It, too, conforms to ASTM F-1066.

Increased vinyl content in Vinyl Enhanced Tile provides the superior durability and easy maintenance needed in environments such as public libraries.

Solid vinyl tile (SVT) is characterized by a vinyl content even higher than vinyl-enhanced tile. Solid vinyl tile typically has a binder (vinyl) content in excess of 34 percent, giving it the advantage of longer wear, and maximum resistance to indentation and stain resistance. Its initial cost is slightly higher than VET, and because SVT requires special adhesives, its installation cost is also slightly higher than for VET. Solid vinyl tile conforms to ASTM F-1700. The material is most often found in corporate and hospitality projects and also is frequently seen in manufacturing as well as retail and healthcare settings.

Luxury vinyl tile (LVT), laminated with photographic or print film, is characterized by a clear wear layer, and an inner print film over either solid (SVT) or composite (VCT) backing. Common visuals in the luxury vinyl line include wood plank, stone, metallic and ceramic images that mimic, with sometimes surprising realism, natural materials. Luxury vinyls are governed by ASTM F-1700, and are found today with increasing frequency in retail and public spaces, healthcare and hospitality spaces and are making their way, increasingly, into residential projects.

Static dissipative tile (SDT) that dissipate static charges through either dissipative (1 billion to10 billion ohms) or conductive (less than 1 million ohms) means are available in limited color ranges for use in electronic manufacturing sites, computer labs, pyrotechnic manufacturing and healthcare facilities where potentially flammable gases are in use. Dissipative tile, governed by ASTM F-1066, will require, in most cases, special adhesives and ground materials that increase installation cost.

Slip-retardant tiles, manufactured with a surface grit, a surface embossing, or both, benefit from an increased coefficient of friction, and are, therefore, recommended for ramped surfaces or for wet or dry applications to reduce slips and falls. Manufacturers note, however, that even slip retardant tile is not a substitute for good maintenance and that proper maintenance prevents accidents and minimizes liability to a greater extent than slip retardant tile.

Sheet Categories

Inlaid sheet flooring combines inlaid vinyl chips in a matrix that is usually attached to a felt (or vinyl, or fiberglass) backing, frequently with a protective topcoat. With inlaid sheet flooring, the color or pattern is an integral part of the wear layer. It is specified as an ASTM F-1303 Type II flooring.

Cushioned sheet flooring is overlain by a printed foam layer that creates a textured surface that can replicate, for instance, a brick design. The imprint on the foam layer is accomplished through what is known as "chemical embossing." Its application is mostly in residential and light commercial projects like doctor or dentist offices. Cushioned products, because they are generally very soft, may not wear as well as other products and because of the foam layer, may not meet fire code requirements for large commercial projects.

"Homogeneous" sheet flooring is characterized by a consistent color and pattern throughout the thickness of the flooring. It has what is known as a solid wear layer. The wear layer equals the total thickness of the product. Homogeneous flooring must have a binder (vinyl) content of at least 50 percent.

"Heterogeneous" sheet flooring is a laminated product, most often topped by a clear wear layer, frequently simulating wood, stone, or other natural materials. It may be cushioned to enhance sound absorption and/or underfoot comfort.

Performance-backed sheet flooring is another laminated product, either homogeneous or heterogeneous in manufacture with a backing of closed-cell PVC foam from 40 mils to a half-in. in thickness for use in applications where increased shock absorption, sound control or warmth are factors.

Slip-retardant sheet flooring, either heat-welded or flash-coved, offers a seamlessness not available with tile. It also, typically, has a higher resistance to staining than tile. Some manufacturers offer a higher degree of stain resistance. These products are usually urethane-enhanced.

Static-control sheet flooring offers the same dissipative characteristics as SDT flooring, but is more sanitary. Common applications are hospital operating rooms and clean rooms.

The Green Revival

Linoleum was the industry standard surface material of the 1950s, but by the mid-70s, the market for linoleum had virtually disappeared. Today, some $15 million worth of linoleum, all of it manufactured outside the U.S., is installed here, and the number is on the rise, say industry sources.

Manufactured using wood pulp, cork powder, limestone, linseed oil, pine tree resin and pigments, linoleum has come back into vogue because of its natural ingredients and durability.

Linoleum is manufactured at only four plants in the world—all in Europe—and is generally available only in sheet form, although some manufacturers offer linoleum in tile form. Linoleum is offered in a broad range of colors and patterns and offers the designer infinite design possibilities. It also possesses excellent "green" credentials.

"It's great stuff," Bassetti's Rindal says of linoleum. "You can do all kinds of things with it. The same product can be used underfoot and on countertops. Starbucks uses it on counters and tabletops. You wouldn't use it on your countertop at home—because it is generally too soft to cut on—but it is tremendously versatile."

"'Environmentally preferable,' a phrase that goes to issues like indoor air quality, etc., has become a buzzword in our industry, but until recently has not been a concern of hospitals. Now, it is becoming a larger issue," says Lisa Brandt, a resource specialist Newport Beach, Calif.-based Taylor & Associates Architects, a firm strongly devoted to healthcare.

"Designers are still early in the learning curve in considering 'green' issues with regard to floorcoverings," says Brandt, partly because there have not been a great number of new hospitals built. But, at least in California, new hospital construction is seeing a resurgence, primarily as a result of recently-passed Senate Bill 1953, which requires all facilities to meet new seismic codes.

"The result is a huge growth in new facilities, all with new emphasis on incorporating 'green' technology. The flooring industry, especially manufacturers of resilient flooring, are testing the water to determine how best to accommodate that new demand," says Brandt. "There was evidence of that at the recent 'Surfaces' trade show in Las Vegas," she says, "and I think that in the next 18 months to two years, we will see a lot of new products that address 'green', as well as lifecycle cost issues."

Interestingly, Brandt says, end users are now attending the same trade shows interiors specialists are and, as a result, are much better informed than ever before. "You don't want to be sitting across the table and be uninformed," she says.

Taylor & Associates is working now on design of a women's pavilion for the Newport Beach Hoag Hospital, scheduled for completion in 2005. "Because the facility will be marketed directly to women, we are looking to create a 'spa' feel," Brandt says. "The healthcare environment demands a sheet vinyl, but we would like to create a natural feel, maybe a wood look. That was once a problem, but the industry has come a phenomenally long way and now offers products that look really, really good, perform well and don't look 'plastic.'"

Incorporating new processes involving urethane systems that greatly reduce maintenance—and the resultant use of harsh chemical strippers and water usage—a new generation of resilient floorcoverings can help designers qualify for LEED credits on environmentally sensitive projects.

Permanent factory-installed urethane systems can "cut maintenance in half, depending upon the conditions," says one manufacturer.

With respect to indoor air quality, some manufacturers are now working on certification for product lines that will meet GreenGuard emission requirements for volatile organic compounds (VOCs). ■

Click For Additional Required Reading

As part of the required material for this CES section, you are required to read additional online material. To access the material online, go to **archrecord.construction.com/resources/conteduc**. To request a faxed copy, contact Elizabeth Reese at Elizabeth.Reese@domcotarkett.com.

LEARNING OBJECTIVES

- Determine the design and performance criteria for selecting resilient flooring.
- Understand the aesthetic and performance characteristics of tile vs. sheet flooring.
- Develop a comprehensive overview of available resilient floor products.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Which is more easily, less expensively installed and more easily repaired?
A: a. Tile
b. Sheet flooring.

Q: 2. The major components of resilient flooring are vinyl and:
A: a. Plasticizers
b. Fillers
c. Stabilizers

Q: 3. In applications. like cleanrooms, where particulates are a problem, which is a better solution?
A: a. Higher-vinyl content
b. Lower-vinyl content

Q: 4. As a general rule, the higher the coefficient of friction (COF) the lower the maintenance the floor will require.
A: a. True
b. False

Q: 5. The Illuminating Engineering Society of North America recommends that floors in offices have a reflectance factor of:
A: a. 20-40 percent
b. 30-50 percent
c. 20-30 percent

Q: 6. Vinyl flooring products have not been significant contributors to the spread of fire or resulting hazards.
A: a. True
b. False

Q: 7. Higher quality vinyl floors may also utilize which:
A: a. Vinyl wearlayer
b. Urethane wearlayer

Q: 8. Which is used to minimize degradation and discoloration from heat and light.
A: a. Plasticizers
b. Stabilizers
c. Pigments
d. Fillers

Q: 9. The "calendering" process means:
A: a. Components are mixed together then fed through a series of rollers to achieve the desired gauge.
b. Melt-compounding the ingredients at high temperatures then molding into the desired shape.

Q: 10. Which account for roughly 80 percent of all installed resilient flooring?
A: a. Vinyl composition tile (VCT)
b. Vinyl enhance tile (VET)
c. Solid vinyl tile (SVT)

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Homeland Security is at a critical crossroads—the spending boom on expensive, security-based building improvements that was forecast in the months following Sept. 11 has not materialized. So what are the next steps that architects and engineers must take to secure the built environment? How are they addressing interdependent factors like insurance costs and building codes—while calculating a level of risk that is acceptable to the public? And as architects and engineeers respond to security threats, they must calculate how much security is realistic (and palatable) in the real world, where design and security meet developer and insurer.

These issues only scratch the surface of the future and depth of homeland security. Attend this conference to gain specific solutions to these topics and more, including:

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GYPSUM ASSOCIATION

THE GYPSUM ASSOCIATION PRESENTS

The Gypsum Advantage In Area Separation Walls

Effective fire resistance and sound attenuation have long been important considerations for those involved in the design and construction of townhouses and apartments. To satisfy these requirements, a growing number of architects and builders are switching to lightweight gypsum board area separation walls. Gypsum board systems are easy to erect and secure, meet all building code requirements, and provide economical fire protection and sound control.

ONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **The Gypsum Advantage In Area Separation Walls**.

o earn one AIA/CES Learning Unit, including one hour f health safety welfare credit, answer the questions on ge 175, then follow the reporting instructions on page 40 or go to the Continuing Education section on *rchrecord.construction.com* and follow the reporting structions.

EARNING OBJECTIVES

fter reading this article, you should be able to:

Know the applications and installation of light-weight solid and cavity-type gypsum board area separation walls in townhouses and apartments.

Understand fire protection capabilities of gypsum board systems and fire resistance ratings and tests.

Review sound control features and parapets of gypsum board systems.

When it comes to defining area separation–type walls and how they are to be constructed in townhouse and apartment applications, all roads lead through the national model building codes. And whether the codes define a wall system as a "fire wall," "party wall," "area separation wall," or "townhouse separation wall," it must meet the same requirements. Namely, it must be a wall that:

- Is continuous from the foundation to the underside of the protected roof sheathing or continues through the roof to form a parapet, and;
- Is designed to allow for collapse of the construction on the side of the wall exposed to fire without collapse of the separation wall.

Area separation walls made of gypsum board have been deemed suitable for use by every model building code because of their ability to effectively withstand fire and attenuate sound.

Often called drywall, wallboard, or plasterboard, gypsum board consists of a noncombustible core, primarily gypsum, and a paper facing on the front, back, and along the edges. Its sturdy, noncombustible core distinguishes it from products such as plywood, hardboard, and fiberboard. Once all joints and fastener heads are covered with a joint treatment material, gypsum board provides a smooth, continuous surface that is both aesthetically attractive and easy to work with.

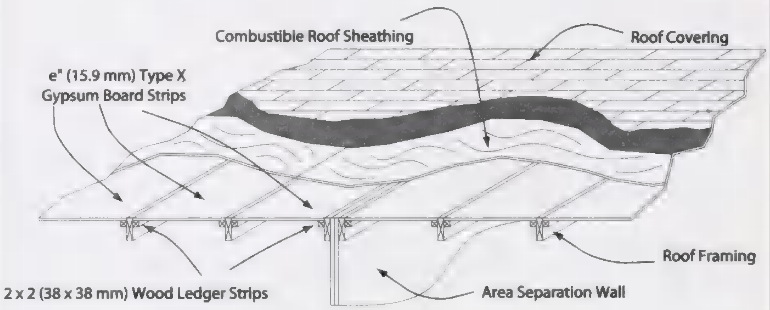
What is Gypsum?

Gypsum is a mineral found in sedimentary rock formations. It occurs in a crystalline form known as calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$). One hundred pounds of gypsum rock contains approximately 21 pounds of chemically combined water.

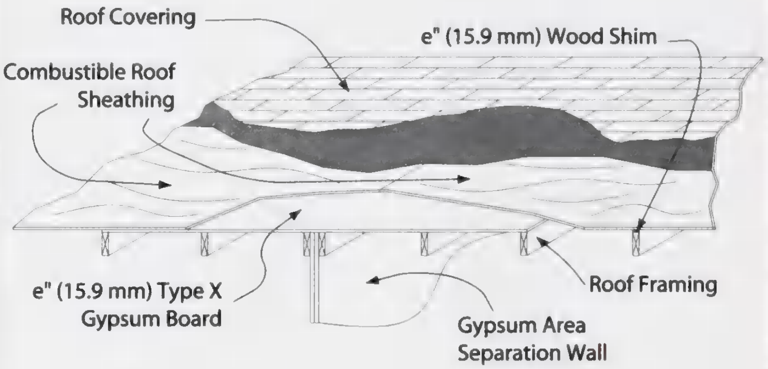
To obtain gypsum suitable for manufacturing, the gypsum rock must be crushed and ground into a fine powder, then heated to about 350 degrees Fahrenheit. The heating process, called calcining, drives off about three-quarters of the chemically combined water.

Gypsum board is produced by mixing calcined gypsum with water and various additives until a slurry is formed. The slurry, in turn, is fed between continuous layers of paper on a "board" machine. As the board moves down a conveyer line, the calcium sulfate (gypsum) rehydrates and the gypsum crystals reform into their original rock state. During this process, the paper surfacing is chemically and mechanically bonded to the core to form a gypsum board. The gypsum board is subsequently cut to length and conveyed through dryers to remove any excess moisture.

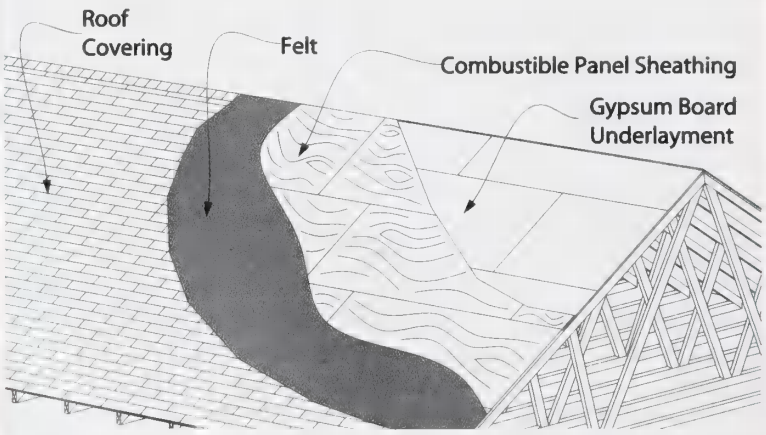
Though gypsum has inherent fire-resistive qualities, each model building code mandates that any system used as an area separation wall must first be fire tested based on the requirements of a specific test standard, such as ASTM E 119, "Standard Test Method for Fire Tests of Building Construction and Materials," or its equivalent. These test standards produce numerical ratings that can be used as a benchmark for comparing and evaluating fire-resistive systems. Fire-resistance classifications are the results of tests conducted on assemblies made up of specific materials put together in a specified manner; therefore, variation from the test conditions, or the specimen construction, including, but not



Ledger - Strip Roof Underlayment Method



Partial Roof Underlayment Method



Full Roof Underlayment Method

limited to, the type and size of materials and the method of construction wil affect the fire-test response.

Model building codes usually require townhouse units to be separated by a two-hour fire-rated system. This is achieved by installing a single two-hour–rated wall such as a gypsum board area separation wall. In some circumstances, such as those defined in the International Residential Code (IRC) or the Uniform Building Code (UBC), the required fire separation rating may also be attained by installing two parallel, adjacent one-hour wall

Gypsum Board Area Separation Wall Components

Gypsum board area separation walls must be installed using the components and installation methods described in the corresponding fire test or listing. The installation should not deviate from that described in the test report, nor should the system include materials that were not evaluated in the original fir test. Though materials cannot be substituted, the application of additional layers of gypsum board to a wall system is permitted since this will not compromise the wall's durability or fire performance.

Since they were first introduced in the townhouse and apartment construction market, gypsum board area separation walls have gained a reputation for being easy and convenient to install and secure. For example, liner panels and metal components can be easily stacked, allowing the separation wall to be inserted during the framing phase of construction.

Gypsum board area separation walls are typically manufactured in either a solid (H-stud) or cavity-type design. The solid variety consists of three basic components:

- Gypsum liner panels that are 1-inch thick, 24- inches wide, and either 8-, 10-, 12- or 14-feet long.
- Metal framing members consisting of 2-inch-wide H-studs and U-shaped track.
- "Break away" L-shaped aluminum clips that soften at relatively low temperatures.

Solid systems are erected vertically one floor at a time. Two layers of 1-inch-thick liner panel are secured at the foundation by being inserted into 2-inch-wide tracks. The panels are held in place by 2-inch H-studs and are erected sequentially along the track. Each completed floor (story) of area separation wall is capped with an inverted piece of track. Following the erection of the adjacent structural building frame, new track is installed on the top of the completed floor of panels and the stacking process is repeated.

Cavity-type area separation walls are constructed with components typically incorporated into either steel stud partition systems, or gypsum board shaft wall enclosures, such as those used to enclose an elevator shaft or duct shaft in a multistory building. As with solid systems, cavity-type area separation walls are erected vertically, beginning with the installation of track at the foundation.

Gypsum board area separation wall systems are attached to the adjacent structure by L-shaped aluminum clips. The clips are fastened to both sides of each stud at each floor or roof/ceiling intersection and provide lateral support for the wall. The clips maintain their full integrity until exposed to temperatures in excess of 1100 degrees Fahrenheit. When one side of the system is exposed to a fire of that intensity, the clips will soften and break away, allowing the adjacent structure on that side of the system to collapse without pulling down the fire-resistive separation wall. The clips on the opposite side of the area separation wall remain intact, since temperatures on that side will be far below the point at which the clip will soften. Consequently, the fire-resistive wall system will remain standing, sparing the adjacent living space from significant damage.

The clips must be manufactured from aluminum in a thickness and shape

Capped Section of Solid Wall.

conforming to the requirements established by the representative fire test and the manufacturer of the area separation wall system. Use of a noncompliant clip, or elimination of the clips altogether, may result in the failure of the system to work as intended.

Ensuring a Successful Application

It is critical that the components of a gypsum board area separation wall system be protected from adverse weather and extreme or continuous moisture during and after the installation. Gypsum panels must also be shielded from sustained temperatures exceeding 125 degrees Fahrenheit / 52 degrees Centigrade. Consequently, gypsum board should not be installed in a sauna, or steam room, or where it will be directly exposed to the immediate heat produced by heat-producing appliances, such as a wood-burning stove.

Joints and fastener heads in the face layers of a gypsum board area separation wall system should be finished to comply with the requirements of the corresponding fire test. Where joint finishing is required by a fire test, it typically can be accomplished by applying a single coat of joint treatment and joint tape to the face layer board joints (Level 1 as described in "Recommended Levels of Gypsum Board Finish, GA-214") and a single coat of joint treatment to the fastener heads. Additional joint treatment may be applied to satisfy aesthetic requirements. Joints between individual pieces of liner panel in a solid system are protected by the H-studs and do not require the application of joint treatment material.

Solid area separation wall systems must be disconnected from adjacent combustible framing members to be fully code compliant. The space requirement is easily met by setting the adjacent wood framing members at least $^{3}/4$-inch to one inch away from the liner panels; the specific distance is established by the representative fire test. If the space requirement cannot be met, the visible faces of the H-studs must be covered with 6-inch-wide gypsum board batten strips, full sheets of gypsum board, or mineral fiber insulation.

Building codes typically require the space between the area separation wall and the adjacent floor joists to be fireblocked to prevent fire from spreading vertically between floors. This can be achieved easily when building with gypsum board area separation walls by inserting continuous pieces of one-inch gypsum board liner panel, mineral fiber insulation, or other code-allowed material into the gap between the wall assembly and the adjacent floor joists. To ensure that it remains securely in place, fireblocking material should be firmly attached to adjacent construction.

Advantages of Gypsum Board Systems

Both solid and cavity-type area separation wall systems weigh no more than 10 pounds per square foot when erected—far less than comparable solid area separation walls made of masonry or concrete. In most construction, gypsum board's light weight eliminates the need for costly footers or foundation modifications, and it allows the systems to be erected directly onto a poured concrete slab.

Gypsum board area separation walls can be erected up to four stories in height, but should never be used as structural elements of a building. Due to variations in limiting height between systems, architects should consult with the manufacturer to determine the maximum height attainable with a specific system.

Load-bearing walls, finished with a layer of gypsum board to provide enhanced aesthetics, are typically erected immediately adjacent and parallel to gypsum board area separation walls. For concealed spaces above finished ceilings and other areas where appearance is not critical and load-bearing walls are not needed, the adjoining walls can be eliminated without compromising the fire resistance of the area separation wall system. If a specialized end-use is intended for a finished area of a dwelling unit, the gypsum board applied to the interior finish walls may be water-resistant gypsum backing board, veneer base for gypsum plaster, or other gypsum specialty materials, provided that the replacement board has the same thickness and core as that described in the representative fire or sound test.

Gypsum board area separation walls can readily accommodate code-compliant electrical and plumbing systems without the installation of additional framing or furring. Code requirements will dictate the correct installation of electrical and plumbing systems and fixtures.

Sound Control Requirements of Area Separation Walls

Townhouse and apartment complexes rely heavily on area separation walls not only for safety, but also to limit the transmission of sound between individual residential units. The model codes typically require walls separating

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Gypsum Board: An Environmental Asset

When it comes to making good use of recycled materials or by-products from manufacturing operations, it's hard to top the gypsum board industry.

More than 40 years ago, long before recycling became popular, the gypsum industry began recycling newsprint and other paper to manufacture the paper facing for gypsum board. Today, nearly 100 percent of the fiber used in the manufacture of gypsum board face and back paper comes from newsprint and post-consumer waste materials.

Gypsum manufacturers also rely increasingly on "synthetic" gypsum as an effective alternative to natural gypsum ore. The former is a by-product, or waste material, from other manufacturing processes, primarily the manufacture of titanium dioxide used in paint and the desulfurization of flue gases in fossil-fueled power plants. Located primarily in the eastern United States, these manufacturing or power-generating facilities are more than pleased to ship a steady stream of "production waste" to nearby gypsum board manufacturing facilities.

Other "green" sources of gypsum are production waste from the gypsum board manufacturing plants and board waste from new construction. Gypsum plants throughout the United States and Canada reclaim usable gypsum by feeding production overruns or materials damaged during production back into the manufacturing cycle. New construction gypsum waste is also reclaimed in some areas and is, after reprocessing, fed back into the board production cycle.

Regardless of the source, "synthetic" or "reclaimed" gypsum meets the same quality standards as natural gypsum, helps to control production costs, and eliminates a costly waste disposal problem. ■

townhouse units to maintain a minimum Sound Transmission Class (STC) rating of 45 to 50 to ensure that sound attenuation occurs between occupied units. To achieve these ratings, it is imperative that the following procedures be followed:

- All system components must be installed as designed. Any deviation from the recommended design or the addition of components not specified by the manufacturer can significantly reduce the sound attenuating ability of the separation wall.
- Wall areas must be free of gaps or voids in insulating material.
- Flanking paths through which sound can travel must be eliminated.
- Systems must be airtight. Perimeters of gypsum board face layers, outside edges of all membrane cutouts, and all penetrations must be fully caulked. Openings for fixtures and outlets must be cut to the proper size and sealed.

Solid area separation wall systems can easily be constructed to provide STC ratings in excess of 60. Cavity-type area separation walls can also be constructed to achieve STC ratings that exceed model building code requirements.

Building Codes Require Parapets For Area Separation Walls

The model building codes generally require area separation walls to be constructed with a parapet—a vertical segment of the wall that extends through the roof to a specific height, usually 30 to 36 inches above the roofline. Gypsum board area separation walls can be constructed with parapets so long as the total erected height of the wall system does not exceed the manufacturer's established maximum and the parapets are protected from the elements by a code-compliant cladding or finishing system.

Building codes usually allow builders to eliminate parapets in townhouse construction if the proper combination of the following conditions is met:

- The roof is covered with a code-defined minimum (usually Class C) roofing material and;
- The roof decking or sheathing is constructed with noncombustible material, or approved fire-retardant–treated wood, for a minimum distanc of four feet on each side of the firewall or;
- A layer of $^{5}/_{8}$-inch-thick type X gypsum board is installed immediately beneath the roof sheathing for a distance of at least 4 feet on either side of the townhouse separation wall.

Summary

- Model building codes allow the use of gypsum board area separation walls in townhouse and apartment applications.
- Gypsum board area separation wall systems are fire tested using code required test standards, such as ASTM E 119, "Standard Test Method for Fi Tests of Building Construction and Materials."
- Gypsum board area separation walls are designed to comply with code requirements that define the required integrity of an area separation wall.
- Gypsum board area separation walls can be constructed in either solid or cavity design, depending on their intended use.
- Gypsum board area separation wall systems are light in weight, use few components, and are installed as the building is framed.
- Gypsum board area separation walls can be erected up to four stories in height (depending on manufacturer limitations), but should never be used as structural elements of a building.
- Gypsum board area separation walls can be constructed to satisfy typical building code standards for sound attenuation between townhouse or apartment units.
- Gypsum board area separation walls can be constructed with or without a parapet.

Gypsum Board Roof Underlayment: A Code-Compliant Alternative to Roof Parapets

The use of $^{5}/_{8}$-inch thick type X gypsum board as an underlayment for combustible roofs in townhouse and apartment construction is an effective way to resist the spread of fire from unit to unit over the top of area separation walls. This approach to fire protection is a code-compliant alternative to the use of roof parapets for separating dwelling units.

Building codes generally allow for the elimination of a parapet in townhouse or apartment construction when the roof is covered with a code-specified minimum (usually a Class C) roofing material and the roof is constructed with either noncombustible material or fire-retardant-treated-wood, or the roof incorporates a layer of $^{5}/_{8}$-inch-thick type X gypsum board as a roof sheathing underlayment. If type X gypsum board is used, it must be placed immediately beneath combustible roof sheathing for a distance of at least four feet on either side of the area separation wall.

The gypsum industry has developed three code-compliant methods for installing a gypsum board roof underlayment: the ledger strip method; the partial roof underlayment method; and the full roof underlayment method. Although model codes generally permit any of these methods to be used as an alternative to parapet construction, individual code provisions may vary.

Ledger-strip Method

In the ledger strip method, $^{5}/_{8}$-inch-thick pieces of type X gypsum board are applied to the top side of nominal 2-inch by 2-inch ledger strips that have been attached to the sides of the roof framing members so that the upper surface of the gypsum board is flush with the top of the trusses or rafters. Ledger strips are cut and attached to form a continuous strip.

The gypsum board is cut to fit tightly between the roof framing, supported by and attached to the ledger strips with minimum 1 $^{1}/_{4}$-inch long fasteners spaced a maximum of 48 inches on center. Care must be taken to ensure that gypsum board end joints that span between framing members fit together snugly.

Partial Roof Underlayment Method

In this method, $^{5}/_{8}$-inch-thick sheets of type X gypsum board are installed under the combustible roof sheathing on both sides of the area separation wall for the minimum distance required by the appropriate building code, typically at least four feet.

The gypsum board is applied on top of the roof framing prior to the installation of the combustible roof sheathing. All gypsum board edges oriented parallel to roof framing members should occur over and be supported by the roof framing. Gypsum board must be nailed to each framing member using at least two nails. At a minimum, nails must be 1 $^{3}/_{8}$-inch long gypsum board nails or 4d common nails. In addition, board end and edge joints should fit together snugly.

Trusses and rafters not covered with gypsum board must be shimmed to provide a straight and uniform base for the attachment of the combustible roof sheathing. Sheathing applied over the gypsum board underlayment must be installed with sheathing joints offset from the gypsum board joints, and fasteners must be increased by $^{5}/_{8}$ of an inch to account for the thickness of the gypsum board and shims. The roof membrane is applied as specified by the manufacturer. As an alternate to shimming, two different sizes of roof framing members may be used to achieve a uniform roofing surface.

Full Roof Underlayment

The full roof underlayment method offers a number of advantages over the partial roof underlayment and ledger strip methods. First, it provides the greatest degree of fire protection. Second, it is the least complicated of the three methods to install, and finally, it is generally the most cost effective when the additional labor costs of the other methods are factored in; particularly in developments where individual housing units are relatively narrow.

The full roof underlayment method requires an application of $^{5}/_{8}$-inch-thick type X gypsum board over the entire roof area. The gypsum board is applied perpendicular to and on top of roof framing members before the combustible roof sheathing is installed. All gypsum board end joints should occur over and be supported by roof framing members.

Nailing methods and nail types and sizes are identical to those used in the partial roof underlayment method. Fasteners used to attach the roof sheathing must be increased in length by $^{5}/_{8}$-inch to account for the thickness of the gypsum board. Roof sheathing must be attached to the roof framing so that sheathing joints are offset from joints in the gypsum board.

Additional Concepts

Unlike gypsum board systems that provide wall and ceiling fire-resistance ratings, the joints between gypsum boards installed in the three methods previously described need not be finished with joint treatment materials. In addition, there is no requirement to treat the nails used to secure gypsum board pieces or sheets to framing members.

Screws may substituted for the prescribed nails when the length and head diameter of the screw equal or exceed those of the nails specified and the screw spacing does not exceed the spacing defined for the nails.

Areas where gypsum board is used as an underlayment should be adequately ventilated to control moisture and reduce temperature. Roof framing used to support gypsum board should be installed so that spacing does not exceed standard wood industry criteria. In addition, gypsum board must be protected from inclement weather during installation and until the roof membrane installation is complete. ■

Click for Additional Required Reading

As part of the CES Learning Activity, you are required to read additional material online. To access the material on gypsum area separation walls, fire testing, and gypsum board roof underlayment systems visit **archrecord.construction.com/resources/conteduc**. To obtain a faxed copy of the supplemental material, please call the Gypsum Association at (202) 289-5440. The test below includes questions derived from the online material.

LEARNING OBJECTIVES

- Know the applications and installation of light-weight solid and cavity-type gypsum board area separation walls in townhouses and apartments.
- Understand fire protection capabilities of gypsum board systems and fire resistance ratings and tests.
- Review sound control features and parapets of gypsum board systems.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Area separation-walls must:
A: a. Be continuous from the foundation to the underside of the protected roof sheathing
b. Continue through the roof to form a parapet
c. Both A and B
d. Either A or B

Q: 2. Area separation walls made of gypsum board have been deemed suitable for use by every model building code because of their ability to effectively withstand fire and attenuate sound.
A: a. True
b. False

Q: 3. In the manufacturing process, calcining the gypsum rock drives off about how much of the chemically combined water:
A: a. $^{1}/_{4}$
b. $^{1}/_{3}$
c. $^{1}/_{2}$
d. $^{3}/_{4}$

Q: 4. Gypsum board is made by mixing calcined gypsum with:
A: a. Water
b. Slurry
c. Plaster

Q: 5. Fire-test response depends on the method of construction and not the type and size of materials.
A: a. True
b. False

Q: 6. Model building codes usually require townhouse units to be separated by a ______ fire-rated system.
A: a. 90 minute
b. Two-hour
c. Three-hour

Q: 7. The Uniform Building Code (UBC) allows a required two-hour fire separation rating to be attained by installing two parallel, adjacent one-hour walls.
A: a. True
b. False

Q: 8. The application of additional layers of gypsum board beyond what is described in a test report is permitted?
A: a. True
b. False

Q: 9. The L-shape aluminum clips work by:
A: a. Maintaining the integrity of both sides of the structure
b. Breaking away allowing one side of the system to collapse

Q: 10. Joints between individual pieces of liner panel in a solid system require the application of joint treatment material.
A: a. True
b. False

GYPSUM ASSOCIATION

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VT INDUSTRIES Architectural Wood Doors

Digital Practice

IN THIS SECTION: Europe's cultural capital struts its stuff with a new arts center (this page); technology helps rebuild the Winter Garden (page 178) • Inspecting the inspection of Columbia University's Low Memorial Library (page 181) • Digital Architect: One firm's technology use (page 187)• New digital tools include photo-management software (page 188). *Deborah Snoonian, P.E.*

BYTES

The International Alliance for Interoperability (IAI) is hosting "Industry Day" to demonstrate the exchange of building information among multiple software packages on Wednesday, May 14, in Alexandria. Virginia. Visit www.nibs.org for more information.

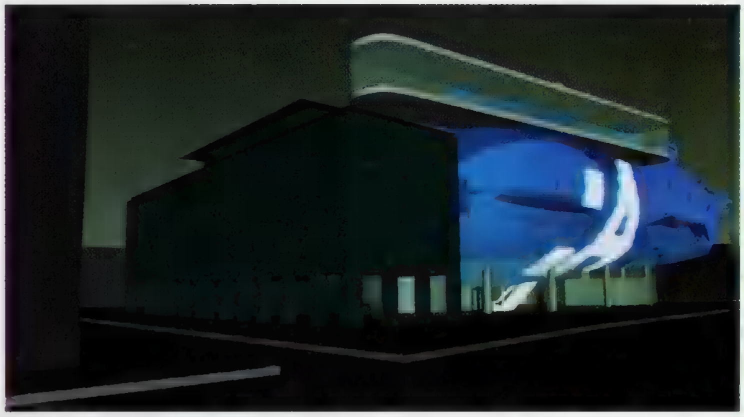
There will be no A/E/C Systems Conference in 2003. The show will be renamed *Technology in Construction* and located with the *World of Concrete* show in Orlando, Florida, in early 2004, according to Hanley-Wood, the show's new owner.

The Triglyph Architectural Organization, a nationwide network of 12 independently owned architecture firms that collaborate to deliver client services, has recently opted to standardize on Graphisoft's ArchiCAD platform to ease the sharing of design data among offices.

Solid Terrain Modeling manufactured a 4-by-31-foot 3D model of the Hudson River and surrounding areas for an exhibition, *Hudson Riverama*, which opened in February at the Hudson River Museum, in Yonkers, New York. The model was designed and fabricated with the help of computing technology such as satellite imagery and highly accurate topographic data. Site features are imprinted on the high-density foam model by special printers.

At New York's new Museum of Sex, the architecture firm Cleanroom covered the facade with a layer of Spandex stretched tightly over computer-generated aluminum ribs, onto which are projected light shows and animations visible from the street.

In Graz, Austria, a new arts center will speak its own digital language



The Kunsthaus will occupy a prominent site in a downtrodden Graz neighborhood (above). Curators want artists to create digital animations for the building's skin (below).

It's not often that a city searching for an architectural landmark turns to a design that looks like a digitally active digestive system.

Of course, not many towns are like Graz, Austria, a provincial capital that is filling its skyline with modern buildings and has been named the 2003 cultural capital of Europe by the European Union Ministers of Culture.

The city is constructing several new projects, including a town hall, concert hall, literature museum, airport, children's museum, and urban gathering space. But one of the most prominent new works is the Kunsthaus, or Art House, a contemporary art-exhibition space on the city's riverfront. The project was conceived by London architects Peter Cook and Colin Fournier, along with Austrian architectural firm Arge Kunsthaus. Standing across the Mur River from the city core, the Kunsthaus is Graz's most visible new project, and the town hopes it will help revitalize the neglected neighborhood it resides in.

The building, to be completed in September 2003, can be described as biomorphic, thanks to an irregularly shaped mass reminiscent of a pancreas, liver, or stomach, as well as elongated skylight nozzles emerging from the building's exterior. Its smooth facade is composed of blue acrylic panels, most of which are opaque. The architects say this "sleek cocoon" shape was formed primarily to let the space "flow" into its uneven site boundary along the Mur River.

Another source for the shape, explains Arge Kunsthaus's head designer Neils Jonkhans, was a desire to mesh with the surrounding neighborhood's scale and historic character. "If we had designed a conventional building with an orthogonal volume, the building mass would have been out of proportion with the old surrounding [structures]," said Jonkhans. "We wanted to create a building with varying appearances from different perspectives: Depending on distance and viewing angle, Kunsthaus will appear different."

The building's facade literally speaks to the heart of the city through its digital display skin composed of about 1,000 computer-controlled circular fluorescent light tubes that send out messages and animated displays. Known as BIX (a cross between the words "big" and "pixel"), the layer of light tubes is mounted behind a layer of outer acrylic glass, which covers most of the eastern facade and curves along the contours of the building.

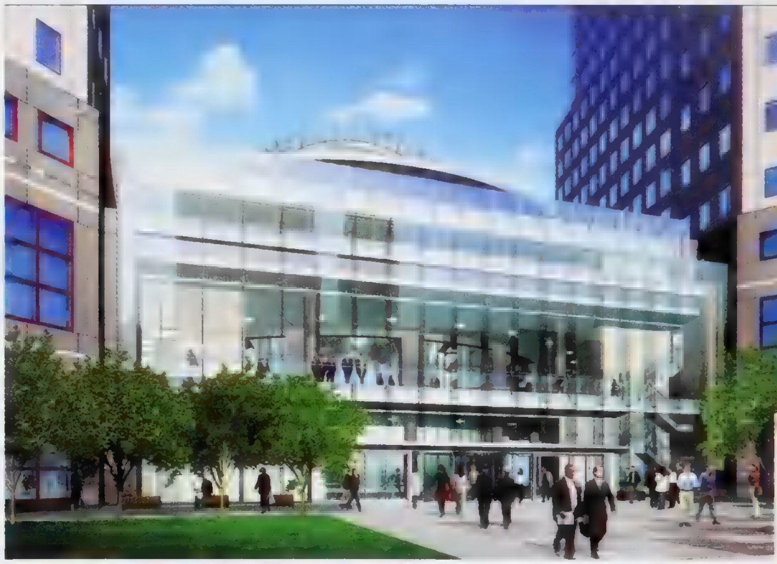
Realities:United, the Berlin firm that created the skin, points out that the screen's organic, built-in nature and its large, low-resolution "pixels" (i.e., the fluorescent tubes) distinguish it from the digital screens mounted on many other buildings, such as those in Times Square. The firm's cofounder, Jan Edler, is "gloriously incapable" of projecting most typical television and film sequences. such as ads and movie trailers. Instead, it will display work designed specifically for the building and catered to the owners' or artists' intentions. "If company XYZ is going to sponsor an exhibition, they will not be able to just take the latest company [information] and show it on the facade. It will just not work," said Edler. "There will always be the basic requirement to work with this special BIX format—and in this way, to work with the special architecture of the building itself."

Software developed by Realities:United called BIX.OS lets artists design programs for the facade by creating features such as repetitions, random/shuffle options, and automatic timers. Kunsthaus's curator Peter Pakesch is now conceiving of several projects for the building with designers and writers.

The building's flexible gallery space is fitted with more than 1,000 cyberports for multimedia art installations and to let visitors connect to the Internet. The museum will also host digital artists in residence.

Exterior "pixels" are circular fluorescent tubes.

Graz, points out Fournier, is already an established cultural and industrial hub that is known currently for its Schlossberg, a medieval castle hill. But the city still sought an iconic building, "one more little jewel in a town that has a long history of culture," he said. It has already attracted widespread attention thanks to its placement in last year's Venice Biennale. Its unusual nature, the architects predict, will endear it to the city, despite the fact that it's far from indigenous. As Cook noted in a recent lecture, "It may be full of alien concepts, but they are concepts that have to do with integration, and the only question is how long before it becomes incorporated into the city." *Sam Lubell*



Project team relied heavily on digital collaboration to rebuild the Winter Garden quickly

After the Winter Garden suffered extensive damage on September 11, 2001, the owner turned to Cesar Pelli & Associates, the original architect, for help. With ambitious plans to reopen the building by the following September 11, the architect had only nine months to redesign the celebrated glass dome, order new materials, and rebuild the entire east facade. According to the project team, digital design techniques and collaboration were key factors in meeting a tight deadline.

The $50 million restoration project included replacing nearly 70 percent of the arched ceiling, half of the grand staircase, and the marble flooring. A sheer wall of "U" glass that spans from floor to ceiling and overlooks West Street replaced the ruined facade. Setting back a lobby wall by 15 feet expanded the lobby to create a more spacious gathering area that was no longer just a throughway to the now-absent twin towers. "We had to change the entire character of the Winter Garden in a short period of time," said Rafael Pelli, the head architect on the redesign. "And we had to make the new wall work with the old details and to create good transitions between the new and the old." Pelli and design team leader Craig Copeland, AIA, agreed that technology-enabled cooperation between architects, subcontractors, and manufacturers made the project possible.

Adamson & Associates, the architects of record, digitized the original contract documents from the 1980s by scanning them and using them as an "underlay" to create CAD drawings. Once in digital format, the architects used these drawings to verify key dimensions and structural elements with the contractor, Turner Construction. "There were no as-built drawings done, but in this manner we ended up creating a set of as-builts and then using those to move forward with the design," Copeland said.

Renderings of the Winter Garden's new exterior and interior were used to help select materials.

Digital designers dboxstudio of Manhattan created a variety of images of the Winter Garden as it underwent redesign. Using scanned photographs of the building before it was damaged in the terror attacks, designers at Cesar Pelli & Associates did hand sketches of proposed changes, then turned them over to dboxstudio, which uses software like 3D Studio VIZ and Photoshop to create visualizations. They made a 3D frame of the project onto which were overlaid different materials and facade designs. "It was the most effective and expedient way to evaluate materials and to help the client and contractors understand what the goals were," said Copeland. Added Pelli, "The [subcontractors] were able to construct better and quicker because they had input in the design method. This made the process superior from the standpoint of design and constructability."

No collaboration software was used; the players merely shared AutoCAD and other files via e-mail. Renderers at dboxstudio maintained a project Web site, where clients could log on to comment on their work. "The circumstances were so particular for this project that everybody was in a mind-set of true collaboration," said Copeland. "If you could ever re-create these circumstances in a more typical project, I'd say these methods worked well." *Victoria Rivkin with D.S.*

DISCOVER THE COLORS OF STRENGTH.

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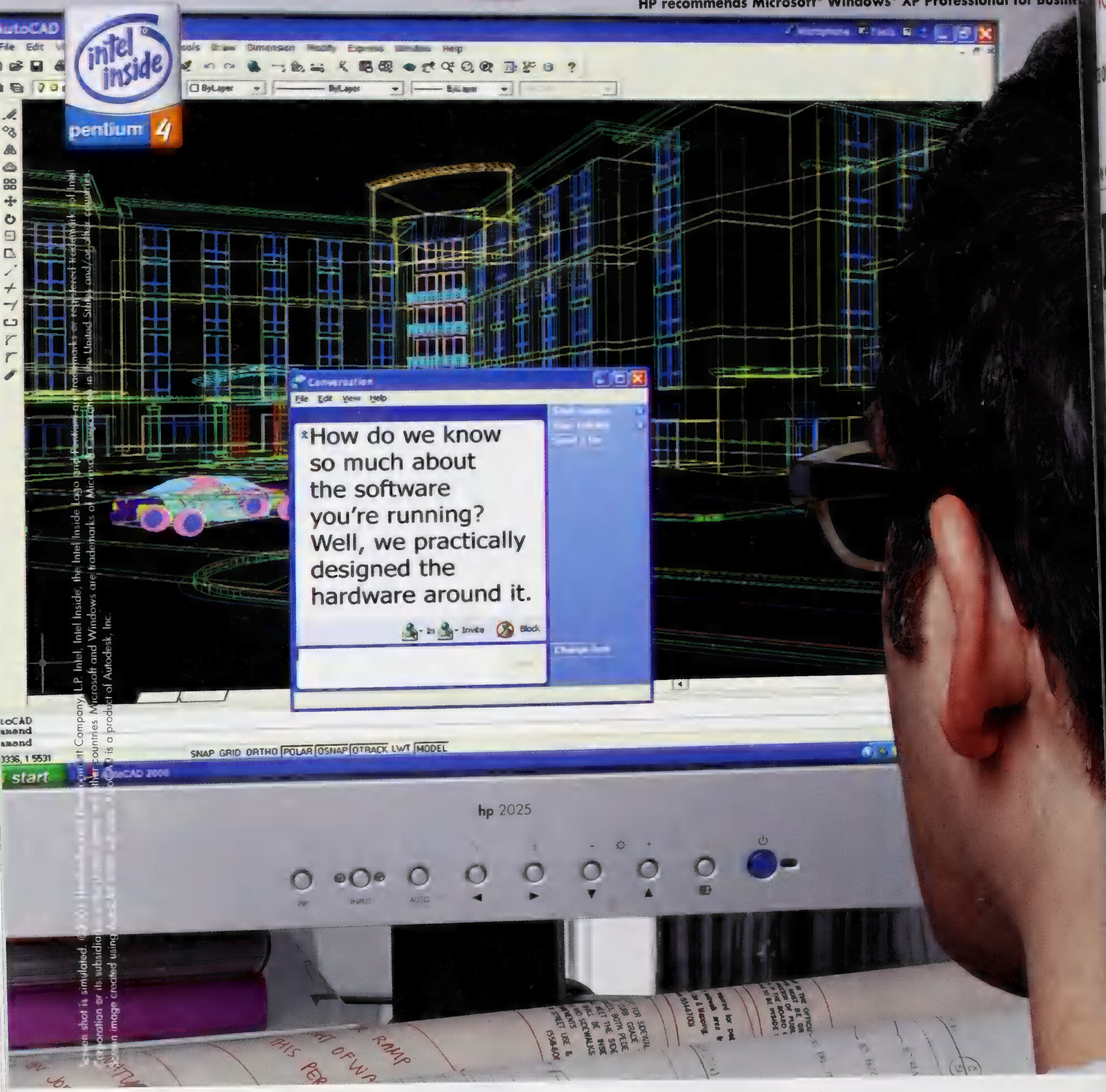

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invent

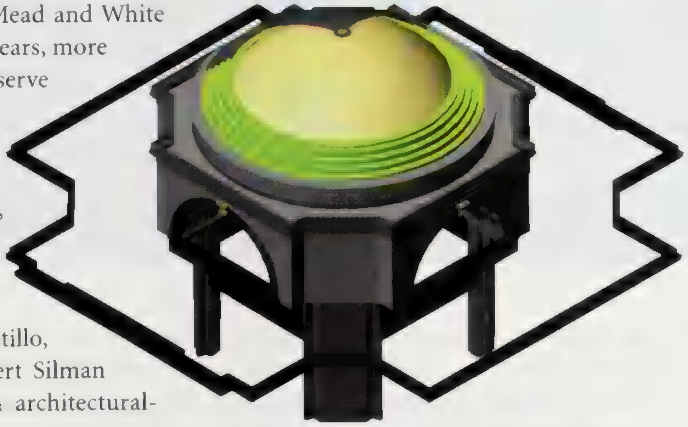
Nondestructive Testing Probes Dome's Safety

IS ONE OF THE WORLD'S LARGEST UNREINFORCED MASONRY DOMES SAFE JUST BECAUSE IT LOOKS SAFE?

By Charles Linn, FAIA

In 1890, Seth Low, Columbia's president, championed the relocation of that small college from Midtown Manhattan to Morningside Heights far to the north. When donors balked at the expense, Low decided to lead by example. He pledged $1 million to build a library to anchor the new location. The building would honor his father, a tea trader and owner of a fleet of clipper ships. Low Memorial Library is the centerpiece of McKim, Mead and White's 1894 master plan and is still regarded by many as the most prominent building on campus. Charles McKim designed the library to be constructed entirely of masonry, without a steel superstructure. It is Greek-cross shaped in plan, with a central rotunda covered by a pair of domes that nest one on top of the other. The inner dome is made of plaster on iron-frame-supported metal lath. The outer dome, whose drum is supported by monumental arches and pendentives, is sheathed with limestone panels. Until recently, the composition of its supporting structure had gone unstudied.

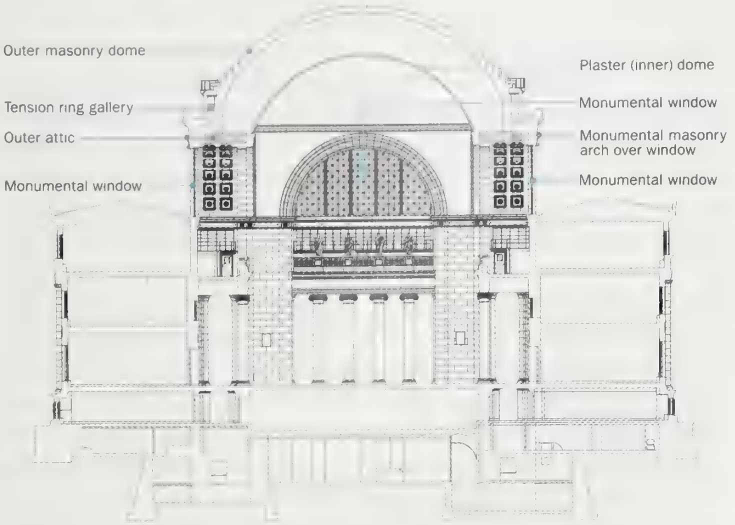
It is little wonder that the administration of Columbia University considers its collection of 24 McKim, Mead and White buildings to be one of its greatest assets. In recent years, more than $170 million has been spent to repair and preserve these architectural treasures. When attention turned to Low, a study of the stability of the dome was a priority. But the structure is complicated. University architect Irwin Lefkowitz, AIA, admits, "We didn't know where to start." When Helpern Architects was hired in 1999 to create plans for modernizing Low's infrastructure and renovating parts of the building, Helpern partner Margaret Castillo, AIA, and consulting engineer Ed Meade, of Robert Silman Associates, found themselves in the midst of an architectural-engineering detective story.



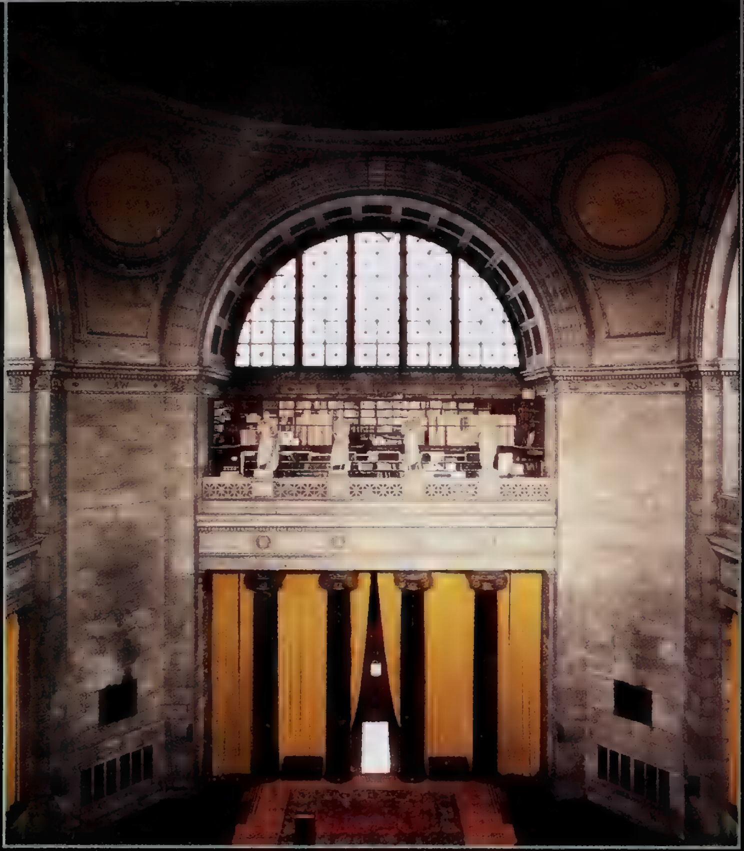
A photograph of Low Memorial Library taken not long after its completion gives an indication of the dome's overall size. Millions of measurements taken using a laser surveying instrument were transformed into AutoCAD models (left) and construction drawings (below).

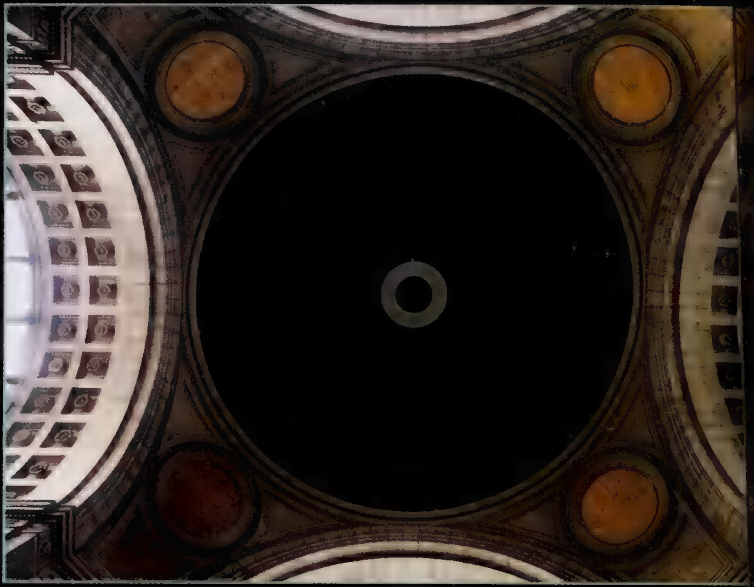
"We had no idea what was up there," says Castillo. "We had seen written accounts of it and drawings, but all of them turned out to be inaccurate." The only indication on Low's final ink-on-linen working drawings was a pair of concentric arcs from which the dome's location and proportions could be inferred. Construction photographs were not as helpful as the architects and engineers might have wished. One image shows construction on the stone inner portion of one of the arches when it was just finished, with the centering still in place. The next in the series shows the dome all but finished.

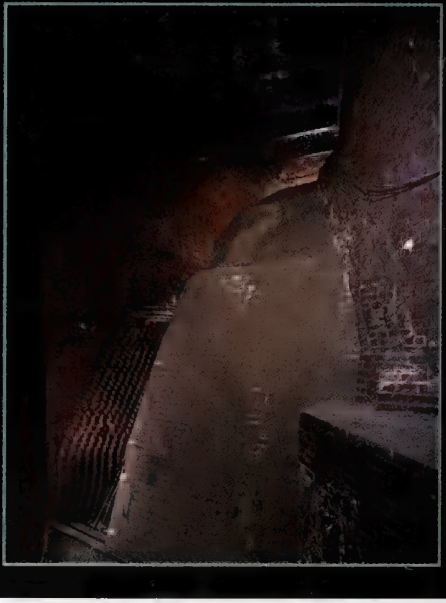
While searching through boxes of correspondence written while the building was under construction, Castillo discovered that the decisions about the outer dome's construction were made in a fashion that would be called "fast-tracking" today. She found correspondence between the contractor, Norcross Brothers of Massachusetts, and the McKim, Mead and White office that revealed that even as the great arches and pendentives that would support the exterior dome were under construction, exactly how it would be built was still being dis-



BUILDING SECTION







The monumental stone arches visible inside the rotunda only do a small part of the job of supporting Low's masonry outer dome. Huge brick arches (right) built on top of the stone ones do the real work. These can only be seen from inside Low's lower attic. In the upper attic, Low's brick outer dome can be seen arching over the iron and lath that support the plaster inner dome (opposite, lower left). The CAD-rendered axonometric detail section (opposite, lower right) was created by corroborating information from original working drawings with data gathered using laser surveys, visual inspections, and hand-taped measurements.

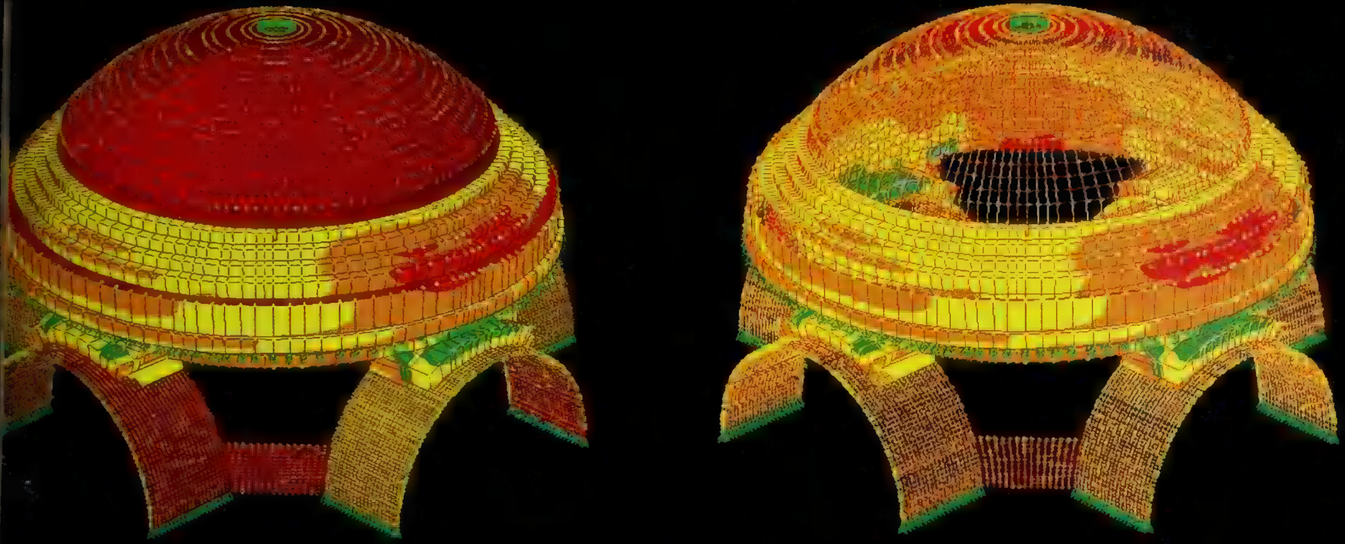
cussed. Guastavino tile was actually shown on drawings discovered by Castillo, but according to a letter she located, Norcross declined to guarantee Guastavino's work. Another proposal drawing showed that thin-shell concrete was considered, but by the time the city building department had approved it, winter weather had set in, making it too cold to execute such work.

When Castillo and Meade began their initial visual survey of Low's upper reaches, university workers led them up a series of narrow circular staircases into the a huge, pitch-black attic space between the inner and outer domes. There, the flashlights on their miner's helmets revealed that the outer dome was actually made of brick, not the steel framing that they had been led to expect by drawings that have appeared in reference materials about McKim, Mead and White buildings. Evidently, the masonry was laid up over wooden centering which had been covered with roofing felt—fragments of it were still stuck to the mortar inside the dome more than 100 years later.

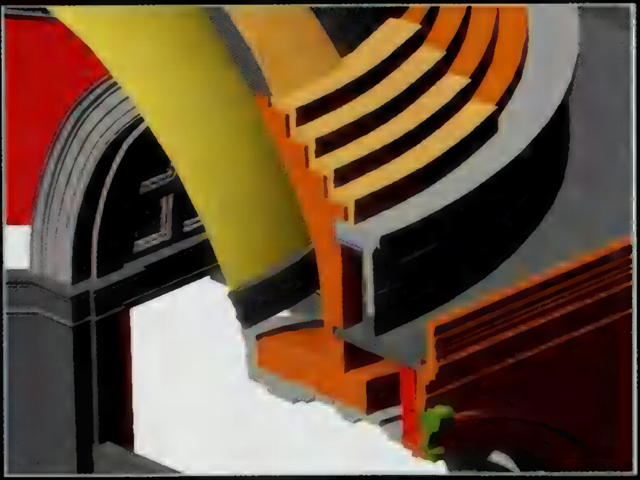
Learning that the dome was brick encouraged speculation about a number of other issues. Was this a wholly masonry structure, or were metal reinforcing or other layers of material being concealed inside it? If metal reinforcing or anchors had been used to reinforce the dome, was it corroding and therefore prone to failure? How much did the dome move over the course of a year, and above all, was it safe? There had been cracks in the arches that support the dome for as long as anyone could remember, and the cast-iron window frames under the east arch had been deformed for decades. "What was alarming," says Castillo, "was that there were reports of sand coming down on the people who occupy two of the four balconies under the great arches. Why would that be happening after 100 years?"

Nondestructive testing techniques

Determining whether the dome over Low was safe required the use of a variety of nondestructive testing methods. These allowed the team to "see" within the dome's structure without having to penetrate it with chisels, drills, or probes. Silman Associates hired GB Geotechnics, a Cambridge, England–based firm that specializes in nondestructive testing, to help. The firm used two techniques at Low: impulse radar and electromagnetic testing. Impulse radar uses an instrument to measure the speed at which high-frequency electromagnetic waves applied to a surface bounce back. It is convenient to use in locations that are difficult to reach because it only requires access to one side of the material being tested. Experts viewing the instruments' output can determine if voids or multiple layers of different materials are present in the area being sampled.



The wire-frame diagrams above were created using SAP2000 Plus. The one on the left is simply a rendering of the dome's structure. The one on the right uses color to indicate the level of stress distribution. Red and orange tones are tensile stresses. Other colors indicate compression. Red also represents the high-tensile zone that corresponds to the cracked region identified from the visual exam and nondestructive testing surveys. The upper portion of this dome has been made transparent for clarity.



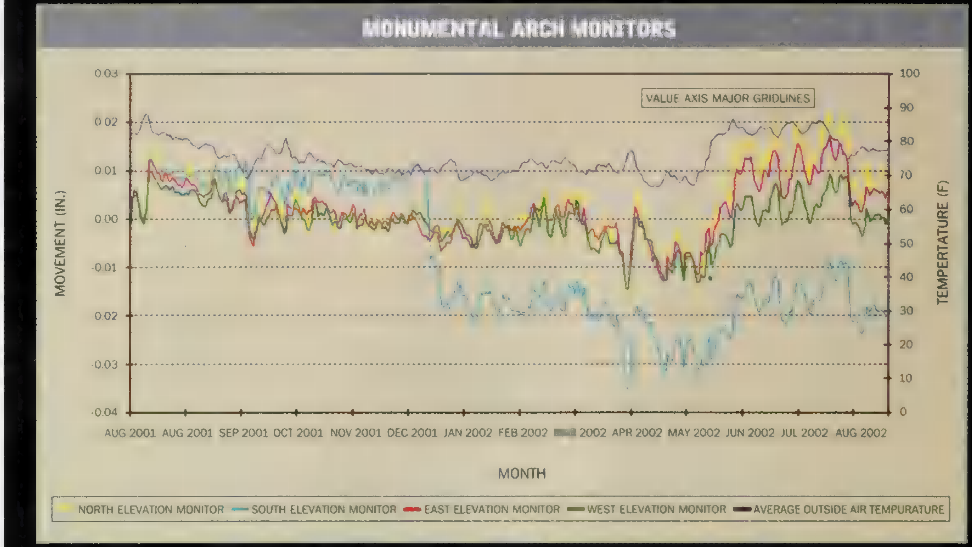
Electromagnetic detection was also used. This employs an instrument that passes an alternating electrical current through a coil of metallic wire that, in turn, creates a magnetic field. When the coil is passed over a surface and the instrument indicates that its magnetic field has been disturbed, the presence of a ferrous material like steel or iron is indicated. As impulse radar and electromagnetic detection were applied to the exterior surface of Low's dome, engineers concentrated in areas where it was likely that reinforcing would be found, if it existed. They were able to determine that, in fact, the dome is made entirely of unreinforced brick and is likely the largest of its kind in the U.S. From the nondestructive testing and visual inspections alone, the dome appeared to be solid and stable.

Laser survey simplifies CAD drawings and structural analysis

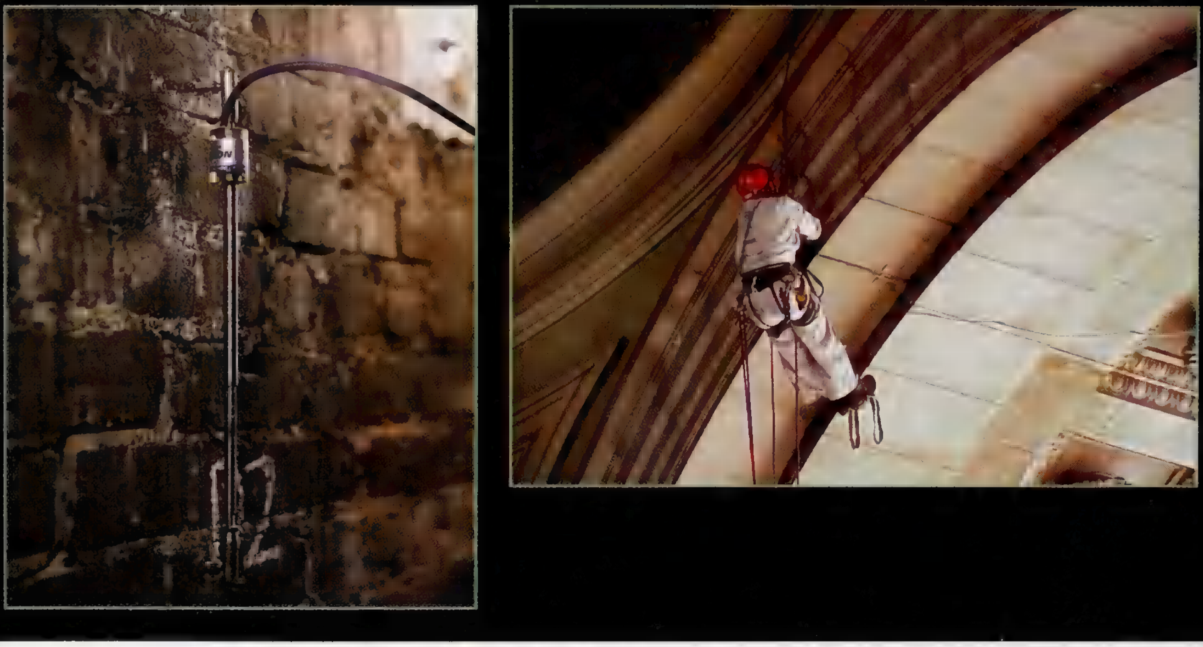
Silman Associates used version 7.44 of SAP2000 Plus, a program for static and dynamic finite element analysis of structures, to verify where tensile stresses would be high in the outer dome and its supporting structure. This would show the engineers the obvious places where they should look for cracking. In order to use the program, the engineers needed to be able to create a mathematical model of the geometry of the dome and its support and to assign loads to this hypothetical structural system. This required an extensive set of drawings, and estimates from the engineers of the size of the dome's dead load—wind and live loads were considered to be negligible—and how it was distributed.

But the team couldn't just tape off these measurements. The space is very complicated, and most of it is impossible to access. The apex of the plaster dome is more than 100 feet above the rotunda floor. GB Geotechnics quickly established dimensions by positioning a laser surveying instrument in a number of locations in and around the building: inside the dome's attic, outside on the roof, and in the rotunda proper. The locations of millions of points were recorded by the survey. These were supplemented by handmade measurements, all the points referenced back to a single station, and the data compiled in a way that allowed AutoCAD drawings to be made.

Once the dimensions of the dome, arches, and piers were known, and the volume of material in the dome calculated, loads could be estimated by using the known density of the type of brick the dome was made of. Among the graphical options for SAP2000 Plus are wire-frame axonometrics that use different colors to represent different kinds of stress. These showed a surprising amount of tension in the dome's lower portion, which surely would have failed if not for a pair of monumental 1-inch-by-12-inch iron tension rings that encircle its base. Elsewhere,



The graph shows how much movement has been measured by crack meters installed on all four arches, plotted against temperature, over the course of a year. Each crack meter (lower left) is attached by a cable to the data logger. Kent Diebolt, of Vertical Access, is shown installing one of the meters on the vertical face of one of Low's monumental arches. Diebolt also did a visual survey using video, and "sounded" the inner plaster dome.



cracks did appear where the computer model led engineers to expect them: at the tops of the supporting arches. So far, there were no surprises. The last question was whether the cracks were getting worse.

Measuring movement

To determine how much Low's dome is moving, Silman Associates had Vibra-Tech, a Mount Holly, N.J.–based consulting firm, install a remote vibration monitoring system. Eighteen devices, called vibrating wire crack meters, were installed at Low. These can accurately monitor changes in the width of a crack of only one hundredth of an inch. The ongoing readings from each are recorded by a computer called a data logger every 15 minutes throughout the year. The data logger is connected to Silman's office by modem for study. Temperature and moisture meters were also installed around the building so that movement can be corroborated against changes in the weather.

It was especially important that crack meters be installed over open joints in the faces of the arches, at their apexes, which are presumed to have existed from the time when construction of Low was just complete. The erection of a scaffold would have taken months, cost hundreds of thousands of dollars, and prevented the use of one of the university's most important gathering spaces. It was impossible to bring a cherry-picker into the rotunda—there simply wasn't any way to maneuver it into the space. So the team called upon Kent Diebolt, whose New York City–based company, Vertical Access, specializes in inspection and nondestructive testing in "extreme locations," to install these sensors. Diebolt also used his high-wire act to support himself in midair while "sounding" the plaster dome—that is, striking it with a hammer to determine that the plaster was still securely attached—and to conduct a video survey of areas that would have been impossible for other team members to see.

Helpern Architects and Robert Silman Associates have concluded that Low's dome is quite safe. Cracks are present where computer analysis indicates that they should be expected, and according to data recorded from the remote monitoring system, they are stable. Has the testing therefore been a colossal waste of money? Hardly, considering that the building is irreplaceable, and safety is a concern—the rotunda is often filled with hundreds of people. Prior to the initiation of this project, no one could really say if the dome was safe. It is a bonus that it has probably been studied more thoroughly than any unreinforced masonry dome besides that of the Duomo in Florence. What has been learned will contribute much to structural engineers' understanding of masonry dome behavior. Irwin Lefkowitz adds, "Low has served Columbia University well for more than 100 years. We want to ensure that it will serve us for 100 more." ■

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Interview: A Visit with BKSK Architects

By Deborah Snoonian, P.E.

Founded in 1985, BKSK Architects is a 30-person, four-partner firm in Manhattan. About a third of their work involves high-end residential design, either for individual clients or for developers and owners who convert entire buildings from industrial to residential use. The balance of their projects involves a variety of building types, including public and institutional buildings, child-care centers, and places of worship. RECORD *sat down recently with partner Joan Krevlin and associate Todd Poisson to discuss the firm's technology.*

ARCHITECTURAL RECORD: *First things first—Mac or PC?*

JOAN KREVLIN: We're all on Macs here. We chose our CAD package, [Nemetschek's] Vectorworks, because we felt it was more intuitive to use and easier to learn than other CAD programs. And Vectorworks is Mac-compatible, so using Macs was a natural choice for us. We do maintain one PC in the office, to translate some AutoCAD files into Vectorworks and to use the AIA's Contract Documents software. I really wish that package were on the Mac platform. [Editor's note: the AIA plans to make this product dual-platform in the future.]

AR: *Do you employ anybody on staff for technical support?*

JK: No, but we have an on-call consultant, Rick Bernstein, who does this work for us: maintains workstations, installs software, trains the staff. We find we get better service by hiring tech support people on a contract basis.

TODD POISSON: Rick is an irreplaceable asset. He steps in to do presentation renderings for us when needed, as well. And he teaches periodic classes to small groups of us, to keep us up to date on various types of software. We also try to appoint one person as an "expert" in each of the software packages, so we can go to that person when we have questions.

BKSK's partners (from left): George Schieferdecker, Stephen F. Byrns, Joan Krevlin, and Harry Kendall.

AR: *Who designed your Web site? Do you maintain it in-house?*

JK: A company called the Brooklyn Digital Foundry designed our site (www.brooklynfoundry.com). We chose them because we really admired the sites they'd built for other architecture firms, like Tod Williams Billie Tsien. The Foundry also designed a very user-friendly interface to allow us to upload text and photos ourselves.

TP: We ran into an interesting conflict when we were designing our Web site. AOL doesn't support Flash 6 [used to create animated Web pages], so we had to create both HTML and Flash versions of our site. We have a lot of residential clients that use AOL to access the Internet, so we need our site to be accessible by all possible venues.

AR: *Is there a difference between younger and older staff when it comes to technological proficiency?*

TP: Yes. And the older/younger divide changes continuously—it seems to happen in 10-year increments. Heavy-duty software prowess is the domain of the younger junior architects, who learn by doing things over and over or from school experience. There isn't a project with a big enough budget for me to learn Form-Z, but I'd love to master that program.

AR: *What's the biggest technological challenge your firm faces?*

JK: I'd say it's color printing. Getting the colors to display correctly onscreen and on paper is tougher than it sounds, and the printers are expensive to buy and maintain.

AR: *If you could create any pie-in-the-sky application or techno-toy for your practice, what would it be?*

TP: We'd like to find database software that can be shared officewide.

JK: We really need an application that will let us maintain a list of contacts, leads, past clients, things like that. We just haven't found anything yet that's Mac-compatible and easy to use. ■

WWW For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at **architecturalrecord.com**.

BKSK upgrades its hardware continuously—none of their computers is more than three years old.
Apple Macintosh G4, from $1,499
www.apple.com

The firm uses digital cameras to document site conditions and construction.
Canon PowerShot S200, $299
www.usa.canon.com

Partner Harry Kendall and associate Todd Poisson rely on Handspring Visors to organize their days.
Handspring Visor Pro, $199
www.handspring.com

Digital Products

From rendering tools to reading on the

By Deborah Snoonian, P.E.

Contract Documents 3.0 Plus
AIA
800/242-3837
www.aia.org

AIA continues to make changes to its popular Contract Documents software. On this go-around, the improvements include 11 new or revised contracts and forms; improved formatting to emulate the look and feel of paper contracts; faster printing with the "draft" watermark in place; and a document-recovery utility that allows documents to be retrieved during printing crashes (a bug that has plagued the software in the past). The upgrade is available free of charge. Despite architects' pleas for a Mac-compatible version of the software, no such product has yet materialized, although the AIA is said to be considering it. Windows-only.

Form-Z 4.0
autodessys
614/488-8838
http://www.formz.com/

Form-Z is one of the most commonplace 3D design tools in an architect's arsenal, and the newest release won industry recognition in 2002, when it was still in beta form. Version 4.0 adds several new features and capabilities, including extra NURBS operations for the creation of complex shapes; new blend and fillet tools for editing 3D objects; more dynamic surface editing and operations on parametric curves to make form generation easier; and a wider selection of textured surfaces, with user-definable surface styles due out in a few months. Lights and light groups can now be included in symbol definitions to easily create light fixtures that can be reused in other projects. It also permits networked machines to render images simultaneously, reducing production time. Windows and Mac OS.

Picasa
Lifescape
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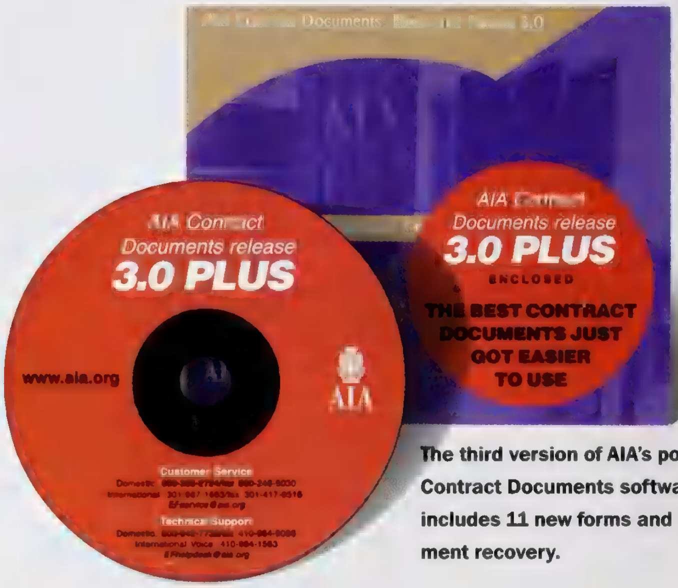
www.picasa.net

Taking digital photographs may be a snap, but saving and managing them is a challenge—and the vendor-specific software that comes bundled with digital cameras is often hit-and-miss on functionality and ease of use. Enter Picasa, an affordable image-management solution to this common problem. It scours your own computer as well as network drives for image files, including JPEGs, TIFFs, BMPs, and PSDs, and video files like MPEGs and AVIs. Files are displayed by name, date, size, or other criteria you specify. Then the fun begins: You can create slide shows, crop to popular sizes (like 4 inches by 6 inches), attach pictures to e-mails, and touch up photos without permanently changing the original picture and with no need to save multiple copies. You can also use the Picasa interface to launch a full-featured image editor, like Photoshop. Users who have downloaded the 15-day free trial version say it's so easy to use they'll never go back to their old software. And at $30, buying a few copies won't clean out your bank account. A handy tool for firms that shoot lots of digital images. Windows only.

(continued on page 190)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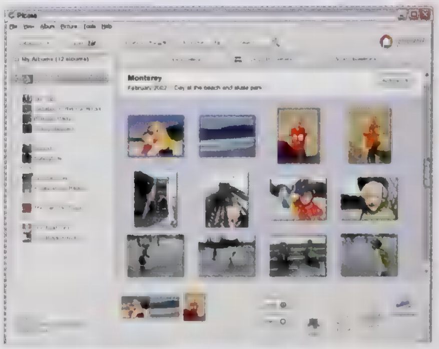
THE BEST CONTRACT DOCUMENTS JUST GOT EASIER TO USE

The third version of AIA's popular Contract Documents software includes 11 new forms and document recovery.

Form-Z 4.0 has won praise in its beta form for improved NURBS sets, better editing tools, and faster rendering.



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Digital Products

Brazil Rendering System
SplutterFish
310/822-3337
www.splutterfish.com

This plug-in to popular rendering programs 3D Studio MAX and Autodesk VIZ is geared to the film and broadcast industries, but architects have been adopting the tool as well for modeling their work. Users claim its simplified interface and intuitive set of tools are its primary selling points. A test version is available free of charge from the company's Web site, and SplutterFish intends for the software eventually to run on other rendering platforms and perhaps as a standalone program. Windows OS only.

FacilityCenter 8i
TRIRIGA
888/874-7442 or 702/932-4444
www.tririga.com

For firms that help clients manage their real estate assets, FacilityCenter 8i offers a Web-based platform in which users can enter, view, and manage life-cycle information such as capital improvements and operation and maintenance activities. The system is capable of tracking information about not only real estate assets, but locations and key personnel as well. Users can customize features such as entry fields, data forms, and work-flow sequences, as well as establish built-in "triggers" to automate tasks such as scheduling of maintenance activities or regular assessments of key holdings. Las Vegas–based TRIRIGA developed the tool after acquiring the FacilityCenter product from Peregrine Systems last year.

REALS
Kajima Corporation (Japan) and University of Utah Graduate School of Architecture
813-3404-3311 (in Japan)
www.reals3d.com

This rendering program is the result of an ongoing collaboration between a leading Japanese software company and the graduate school of architecture at the University of Utah. Available in beta as a free download, REALS will debut as a commercial product this May. The developers claim that the main selling point is that the program was developed by designers for designers, meaning it's not saddled with hundreds of complex functions only special-effects directors need. Its "canvas," the rendering window, is large enough to fit multiple images and views of the same project for comparison. The developers claim that compared to similar software, REALS has faster mouse response time and quicker rendering of spaces lit by multiple sources. REALS can convert files and information from popular design software such as ArchiCAD, Form-Z, AutoCAD, ADT, and Rhinoceros. Windows OS only.

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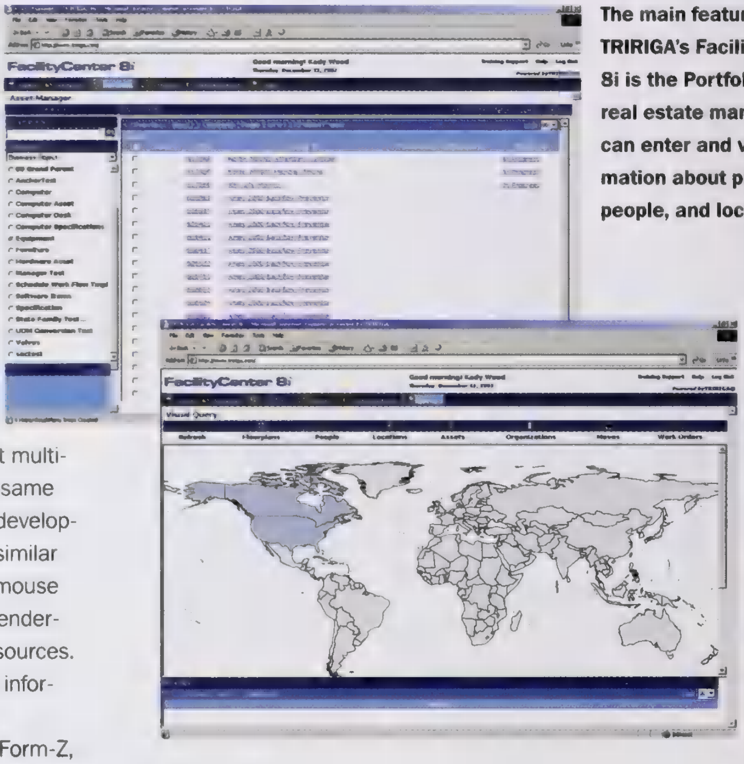
The Brazil Rendering System gets high marks from architects for its interface



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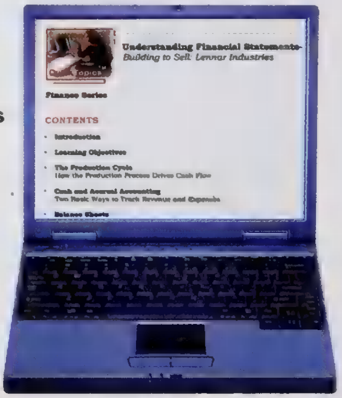

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Brick IN ARCHITECTURE

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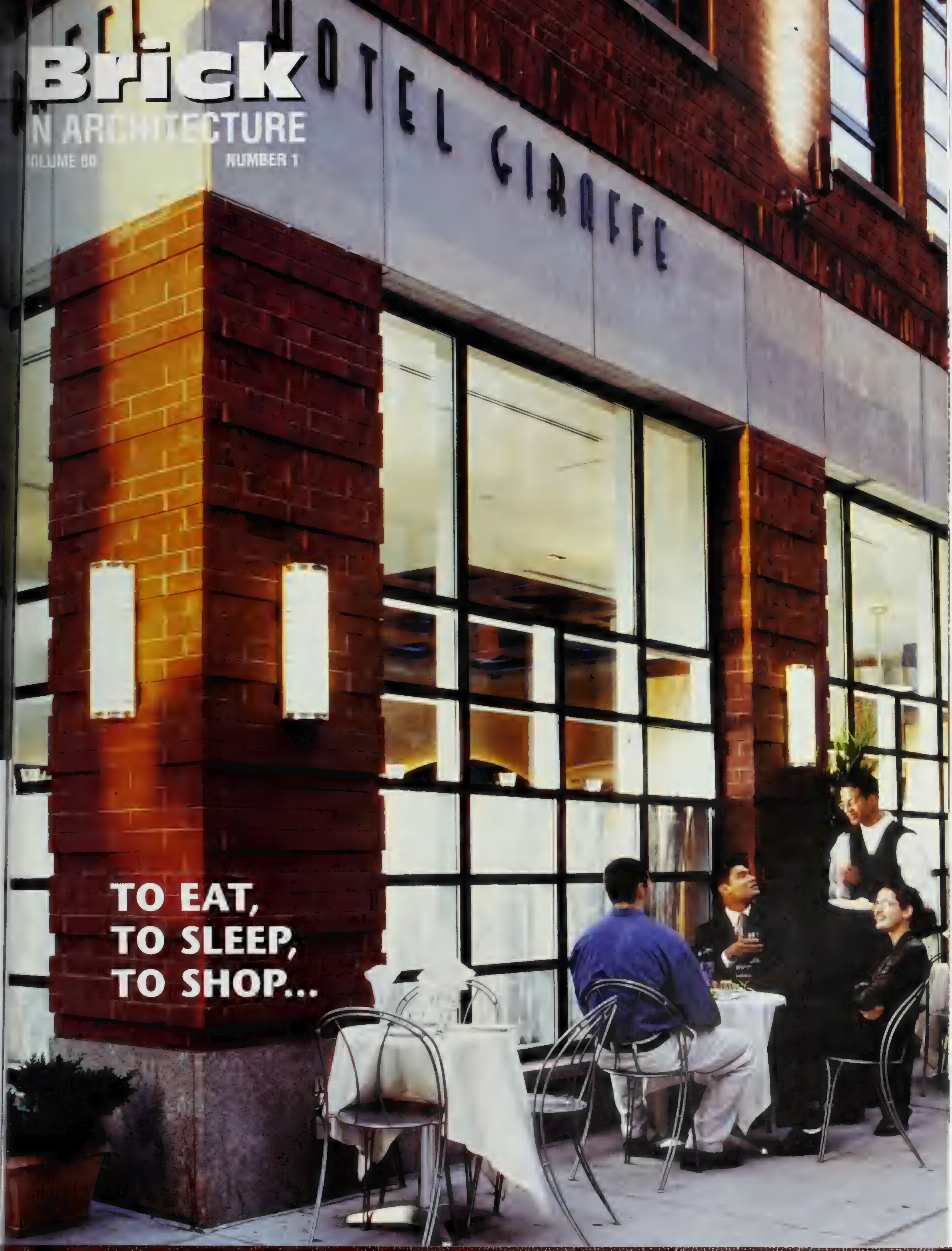
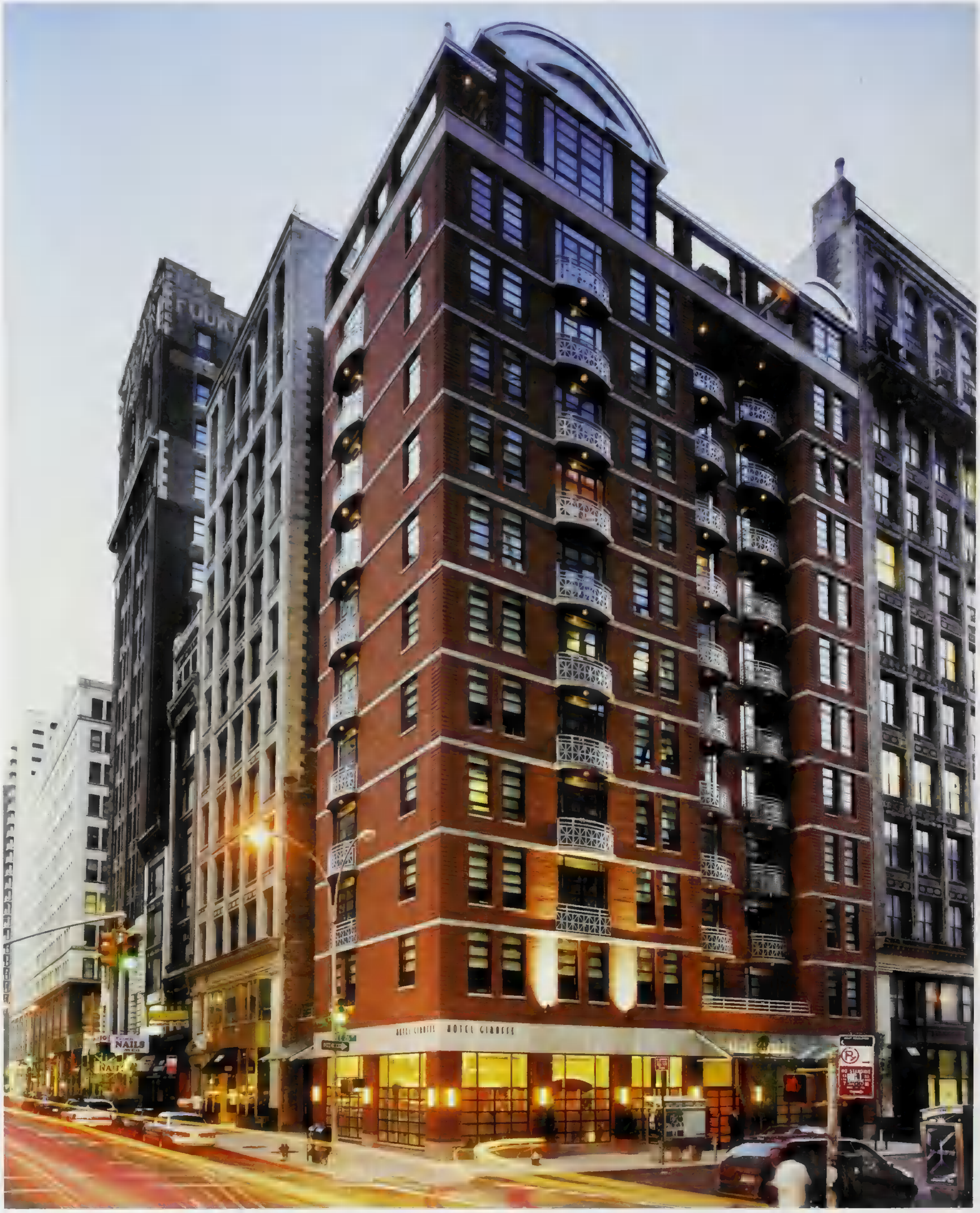


TO EAT,
TO SLEEP,
TO SHOP...

Hotel Giraffe

New York, New York



inside this issue

Bethesda does Chicago, Chicago does Baroque, and New York does...well...what New York does best: New York. Three architects take us on a tour of some new places they highly recommend for wining, dining, shopping, and getting a good night's sleep.

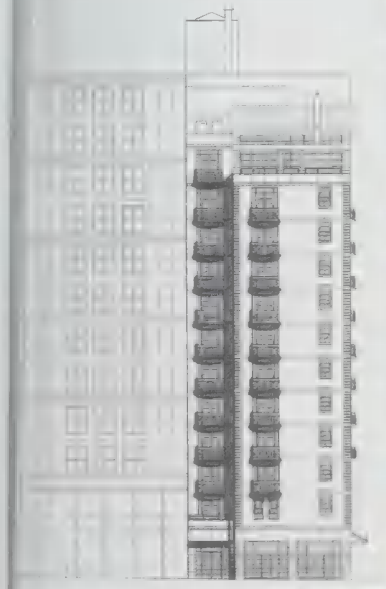
> *"This 12-story hotel at 26th Street and Park Avenue was designed in accordance with the contextual zoning guidelines of the New York City Zoning Resolution. And it's a good example of how these guidelines preserve and reinforce the historic streetscape of New York City."*
>
> **Stephen B. Jacobs**

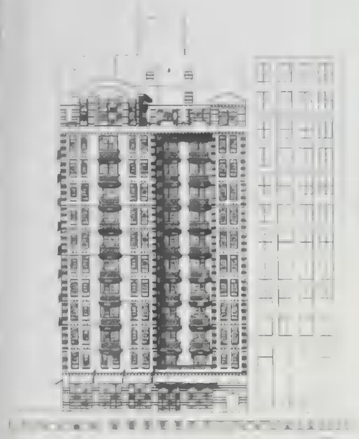
hitect: The Stephen B. Jacobs Group, P.C.
New York, New York

ncipal: Stephen B. Jacobs

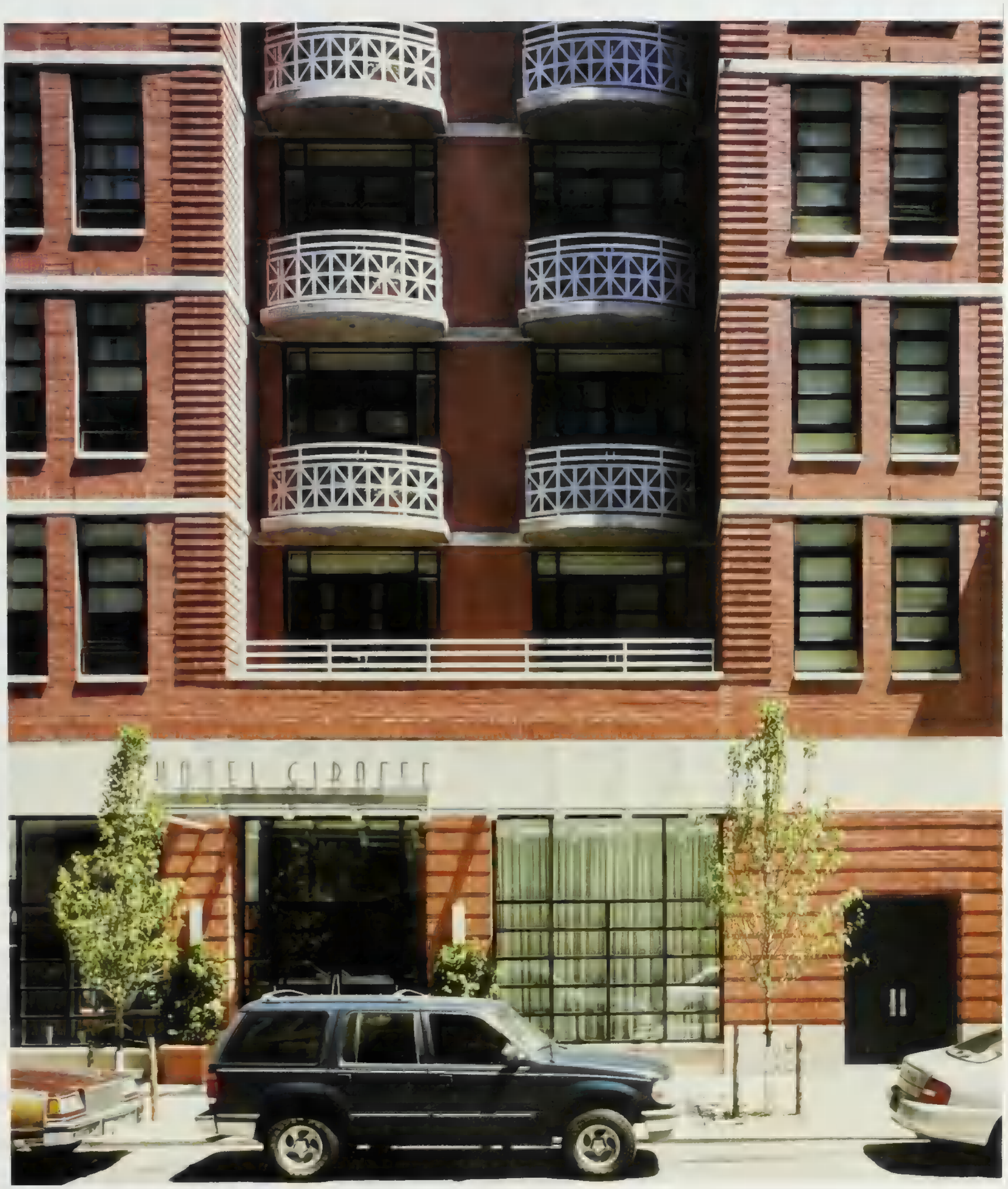
otographer: Bruce Buck Photography
New York, New York

> *"The economics of the project dictated a building constructed in the city palette, that is, flat-plate concrete, exposed eyebrows, and a brick curtain wall exterior. But in the sense that we took that vernacular and interpreted it in a contemporary way, the building is also a good example of our design philosophy. We like to utilize references that come out of the subliminal memory of 4000 years of Western culture, but interpret them non-literally, so the viewer can see what and as they wish."*
>
> **Stephen B. Jacobs**



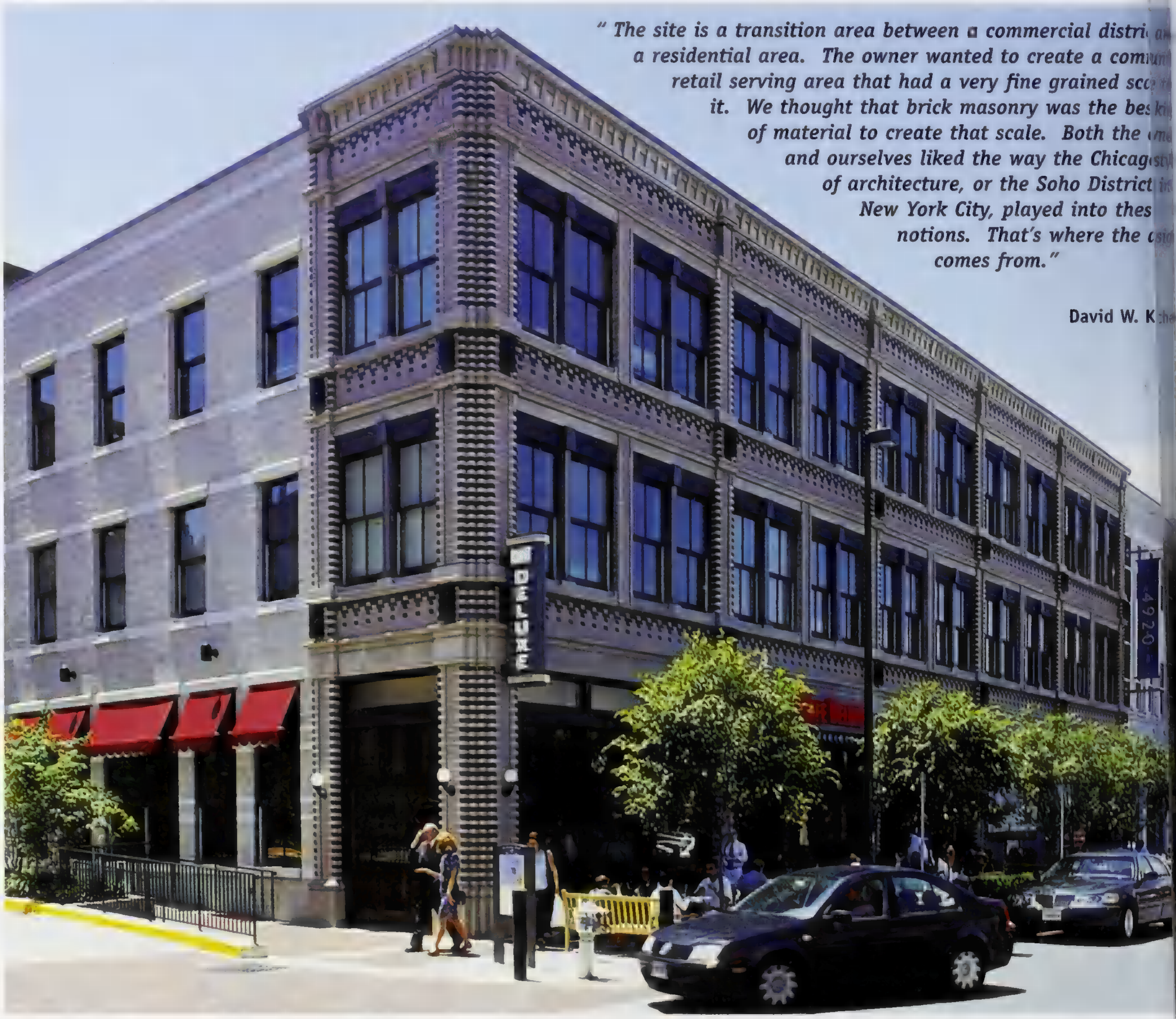


ELEVATION AT 25TH STREET



Bethesda Retail District - Jennings Parcel

Bethesda, Maryland

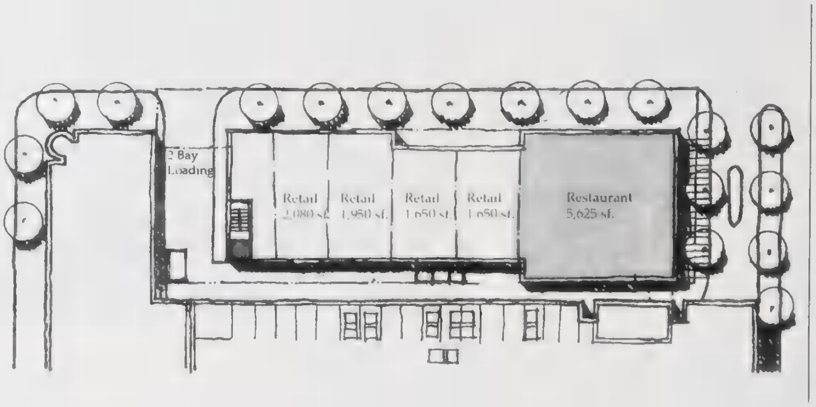


" The site is a transition area between a commercial distri
a residential area. The owner wanted to create a comm
retail serving area that had a very fine grained sc
it. We thought that brick masonry was the bes
of material to create that scale. Both the
and ourselves liked the way the Chicag
of architecture, or the Soho District
New York City, played into thes
notions. That's where the
comes from."

David W. K

" Since it's such a long building, occupying an entire block, we wanted it to feel like it was several buildings that had developed over time. So though the design functions internally as one building, externally there are two building elements, one to the west and one to the east of the center bay. The center bay is the entrance, and is the transition element between the two different designs."

David W. Kitchens



hitect: Cooper Carry, Inc.
Alexandria, Virginia
Atlanta, Georgia
New York, New York

incipal-in Charge: David W. Kitchens

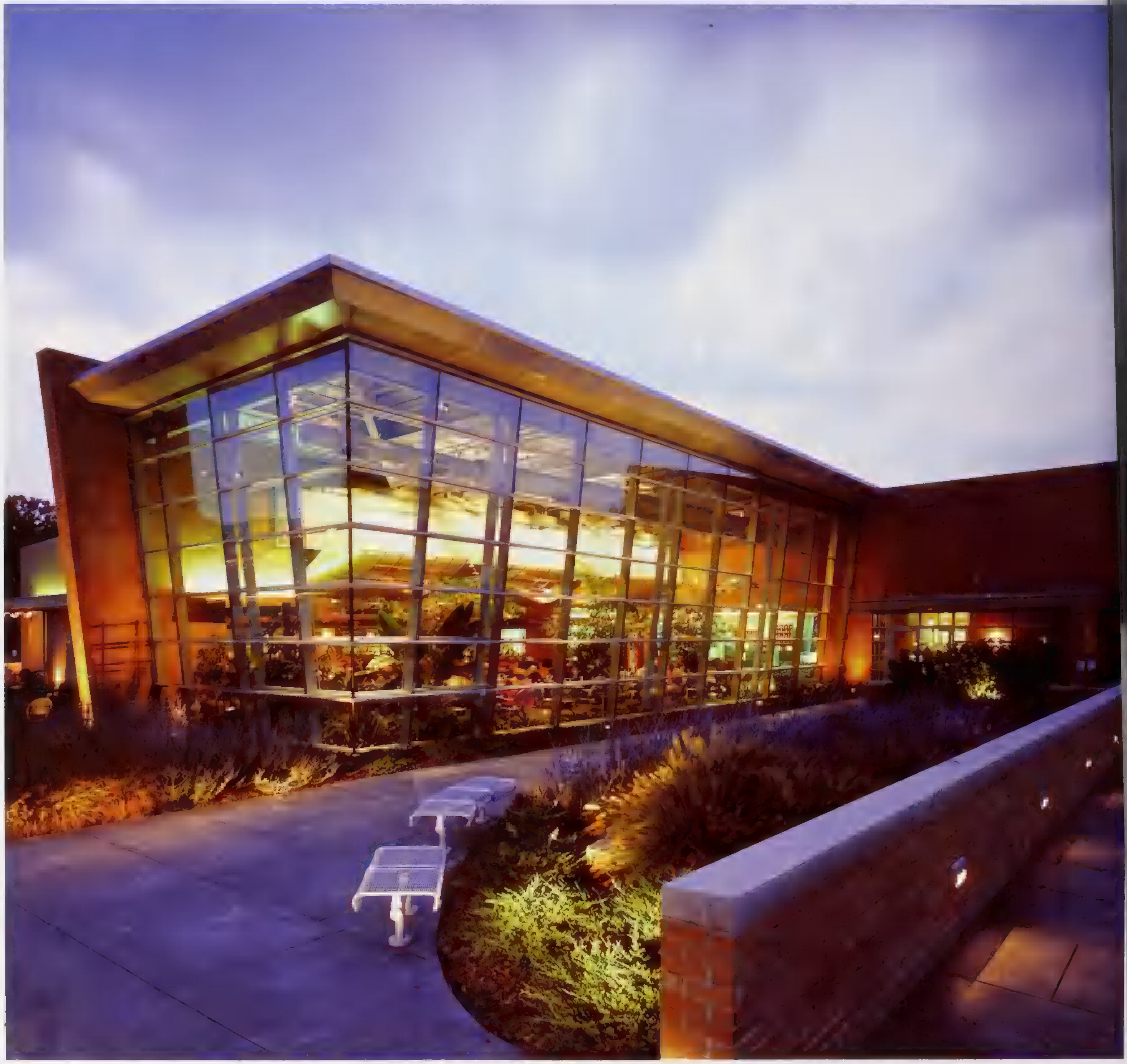
oject Architect: Robin Friedman

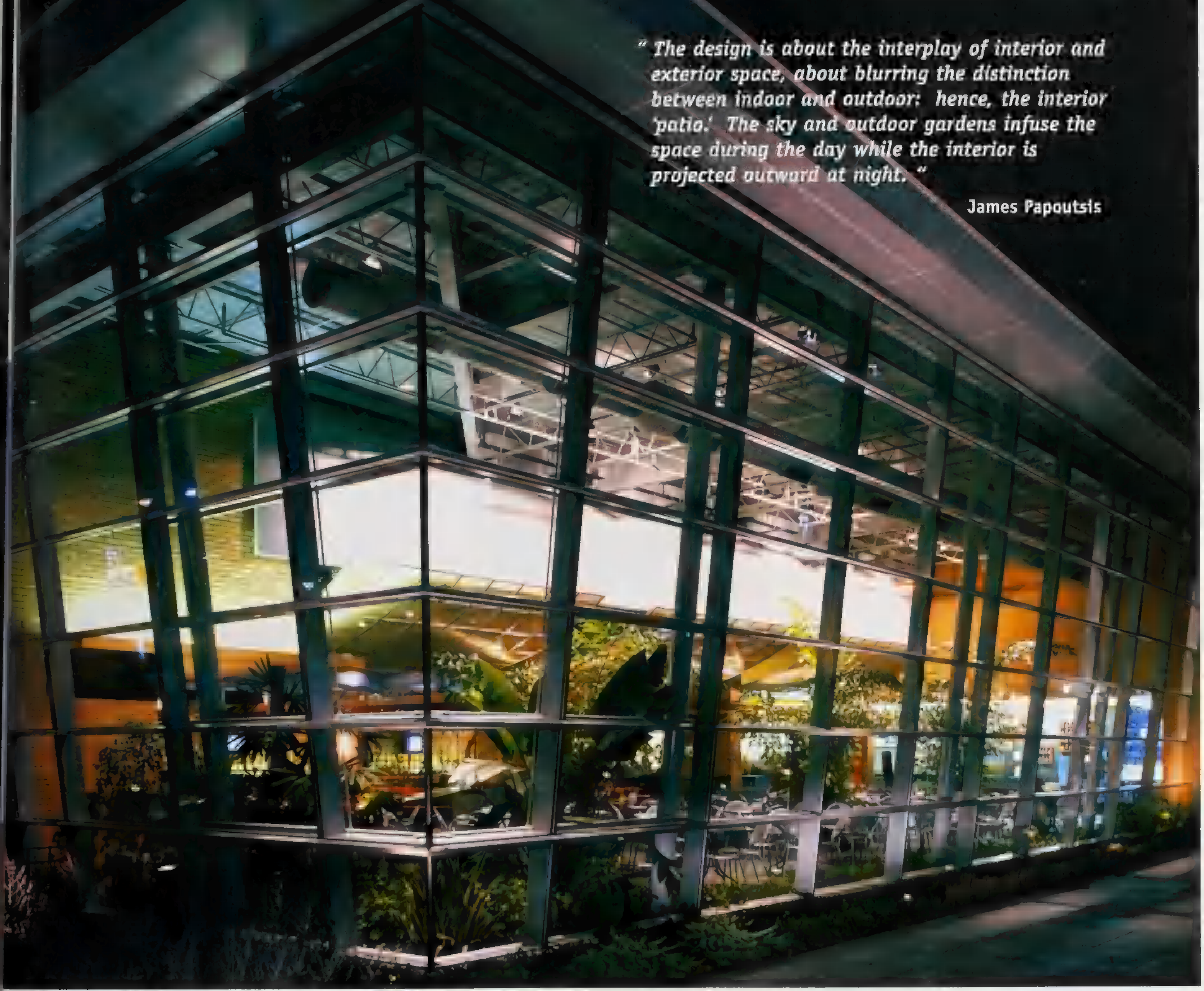
otographer: Erik Taylor Photography
Fairfax Station, Virginia

Patio Restaurant

Orland Park, Illinois

> *"This is suburban strip-architecture, and it's at the same time contemporary architecture. It tries to set a precedent that says let's do something that looks more toward the future, even in a suburban, theme-dominated fast-food type setting. Now in its third variation, this design suggests that even strip-architecture can push the envelope and perhaps even incite change."*
>
> **James Papoutsis**





> “The design is about the interplay of interior and exterior space, about blurring the distinction between indoor and outdoor: hence, the interior ‘patio.’ The sky and outdoor gardens infuse the space during the day while the interior is projected outward at night.”
>
> **James Papoutsis**

Architect:	James Papoutsis Architect Chicago, Illinois onearchitect.com
Principal:	James Papoutsis
Project Team:	JEK Development Bridgeview, Illinois
	Angelo Stamatukos Associates Hindsdale, Illinois
	Peter Krallitsch Associates Chicago, Illinois
Photographer:	William Kildow Photography Chicago, Illinois

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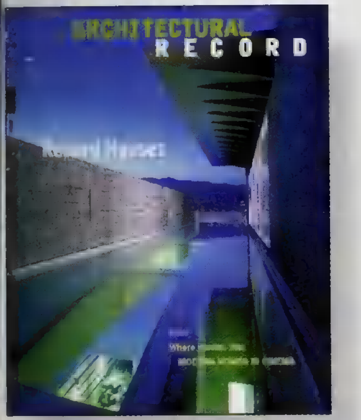
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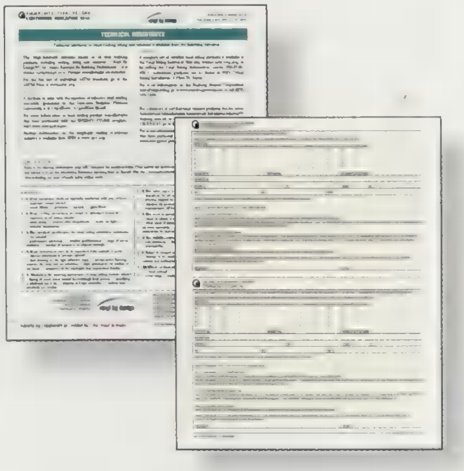

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Windows & Doors

Interiors

From fashion retail stores to furniture showrooms, interior architecture burnishes brands

BRIEFS

In February, the Office of Thierry W. Despont unveiled its design of *Vincent's Choice*, an exhibition at the Van Gogh Museum, in Amsterdam, celebrating the 150th anniversary of the artist's birth on March 30. Continuing through June 15, the architect's installaton juxtaposes works that Van Gogh admired—from Old Masters to Impressionists—in a sweeping, "operatic" setting. **The Angelo Donghia** Materials Library and Study Center at Parsons School of Design, in New York City, designed by architect Christoff Finio, is a new research resource for students, faculty, and scholars, with an exhibition gallery open to the public.

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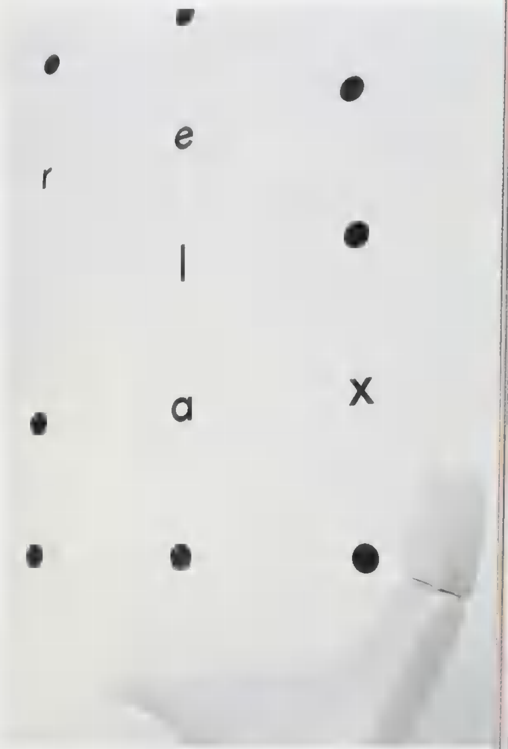
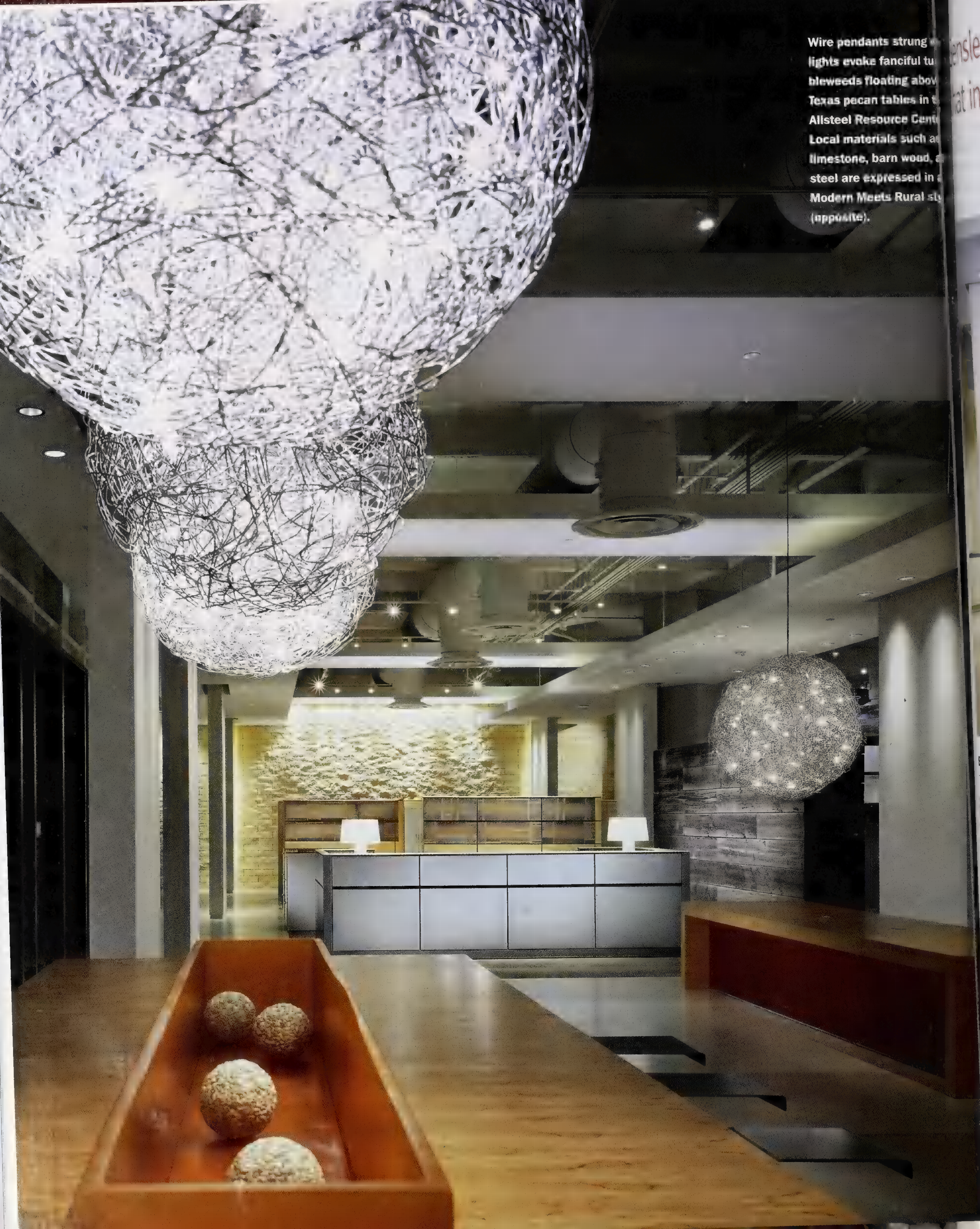
In the correlative worlds of furniture and fashion design, where trends in color and form are sometimes shared (or knocked off), there's an often-repeated refrain that "it's all about the brand." Whether or not consumers follow the work of an individual furniture designer or couturier, long-term brand loyalty secured by a manufacturer or retailer goes a long way toward weathering economic ups and downs.

Historically, it has been the quality of the merchandise, the attention to detail by customer service, and the image-conjuring romance of advertising that has driven the engines of retail stores and to-the-trade showrooms. Today, perhaps more than ever before, the architectural interiors of such spaces are literally helping to build the brands. While many fashion houses and furniture purveyors spent much of the past decade creating spare, white boxes, architects and interior designers are now enlisted to captivate customers via environments with a sharpened point of view.

For Allsteel, regional vernacular styles supported by palettes of indigenous materials distinguish a series of client resource centers across the country. Gensler kept the brand consistent by implementing corporate standards such as ceiling and conference-room treatments. At B&B Italia in London (right), the Minimalist style of John Pawson warms to a more inhabited feeling through his collaboration with furniture designer and architect Antonio Citterio. Retailer Burberry, meanwhile, is sprucing up a staid image with a broader line of more progressive wares, and as a crucial strategic move, by constructing more progressive store interiors. Architects are even creating their own brands: Two companies showcased this month were founded by architects to sell furniture designed by architects. Remember their names during the global rollout: ray20 and TRUCK. Consider yourself branded. *William Weathersby, Jr.*





Wire pendants strung
lights evoke fanciful tu
bleweeds floating abov
Texas pecan tables in
Allsteel Resource Cent
Local materials such a
limestone, barn wood,
steel are expressed in
Modern Meets Rural st
(opposite).

Gensler fashions a resource center for **Allsteel** in Dallas that incorporates regional architectural influences

By John Peter Radulski

Following its successful design of the Allsteel headquarters in Muscatine, Iowa [a Business Week/Architectural Record Award winner; see RECORD, November 2002, page 96], the San Francisco office of Gensler was tapped by the office furniture manufacturer to create four new resource centers across the country. A 100-year-old company now under a new corporate parent, HON, Allsteel sought to express its Midwestern core values while reflecting each new site's local vernacular design influences.

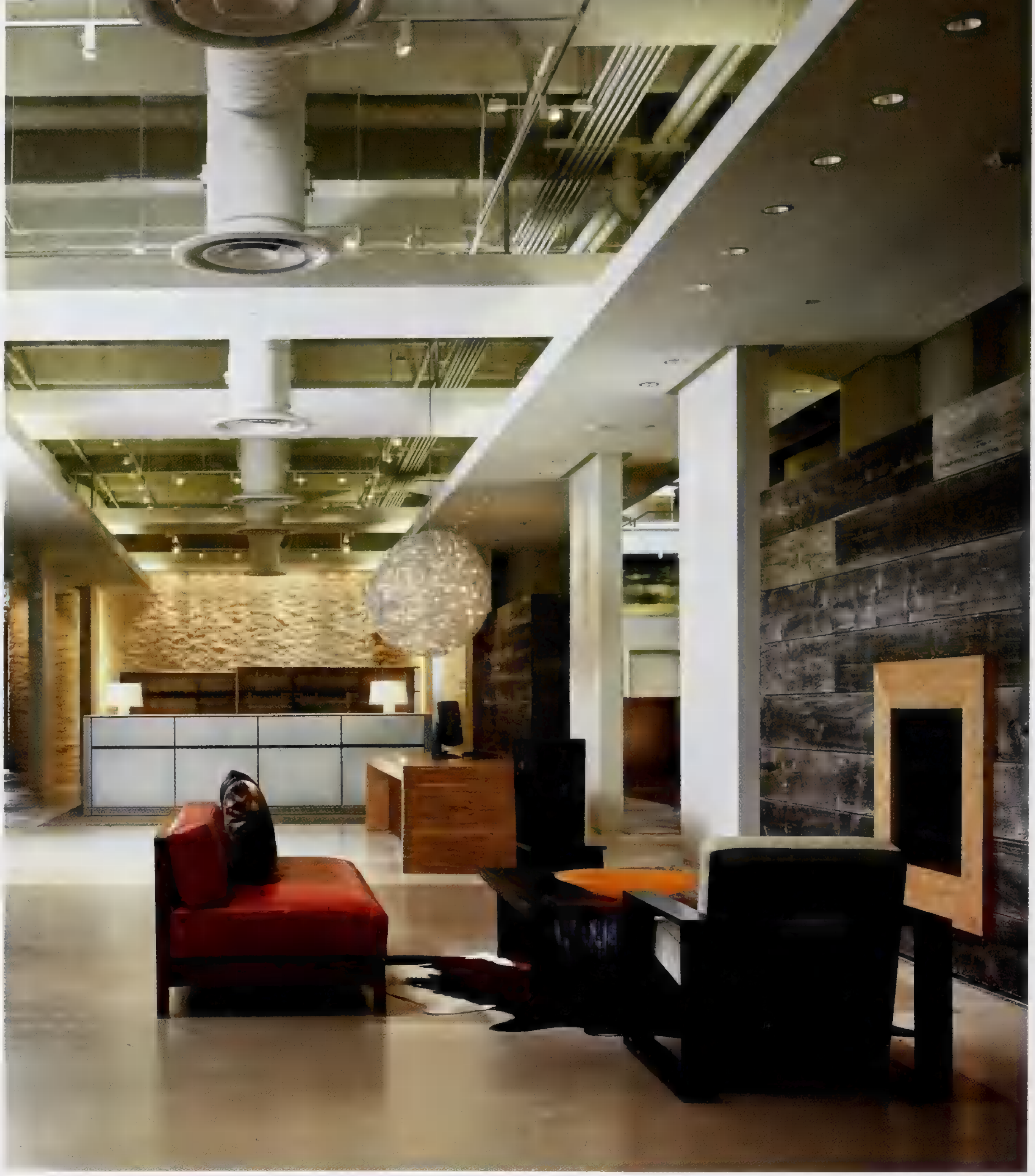
As Gensler partner in charge Collin Burry explains, the resource centers in Los Angeles, Chicago, Washington, D.C., and Dallas were designed to provide dealers, specifiers, and other end users with more than a traditional furniture showroom experience. "Regardless of the location, the client wanted each facility to serve the local design community with meeting spaces where professional organizations, such as the AIA and International Interior Design Association, could gather," Burry says. Functional flexibility was wed to interior finishes and furnishings that visually allude to each geographical location. "We created spaces with regional soul but not so vernacular in spirit that they overwhelm Allsteel's furniture designs or brand image."

While the circulation pattern in the Washington, D.C., resource center, for example, subtly alludes to that city's monumental Capitol rotunda and the historic street grid developed by Pierre Charles L'Enfant, the Dallas facility speaks with a restrained Texan twang.

The 8,400-square-foot, street-level space on McKinney Avenue has an irregular, nine-sided footprint with a shape that can be likened to a dumbbell. Burry took advantage of this unpromising rental space by drawing on a common mid-19th-century Texas residential type called a dog-trot house: two cabins separated by a 10-to-15-foot-wide covered breezeway that provided shade and a place for family dogs to sleep. At

John Peter Radulski is the former editor of Hospitality Design *magazine. He is a writer and design consultant based in Westport, Conn.*

Project: *Allsteel Resource Center, Dallas*
Architect, interior designer: *Gensler, San Francisco—Collin Burry, principal; Sophie Custer, Kate Clemens, Thom Shelton, Frank Lin, Dian Duvall, Nao Etsuki, Kevin Sawyers, project team*
Engineer: *Schmidt Stacy*
Consultants: *Architecture & Light—Rudy Rodriguez (lighting); Studio 585 (graphic design)*
General contractor: *Constructors Dallas*



The informal community center helps bring clients and the larger design community together. A fireplace set into a barn-wood wall is a focal point. Allsteel's Terrace group of workstations sits in front of a stone wall quarried locally (at rear in photo).

Allsteel Dallas, the architects placed the main street entrance on axis with the narrowest portion of the resource center to create a bridge between the two larger functional areas.

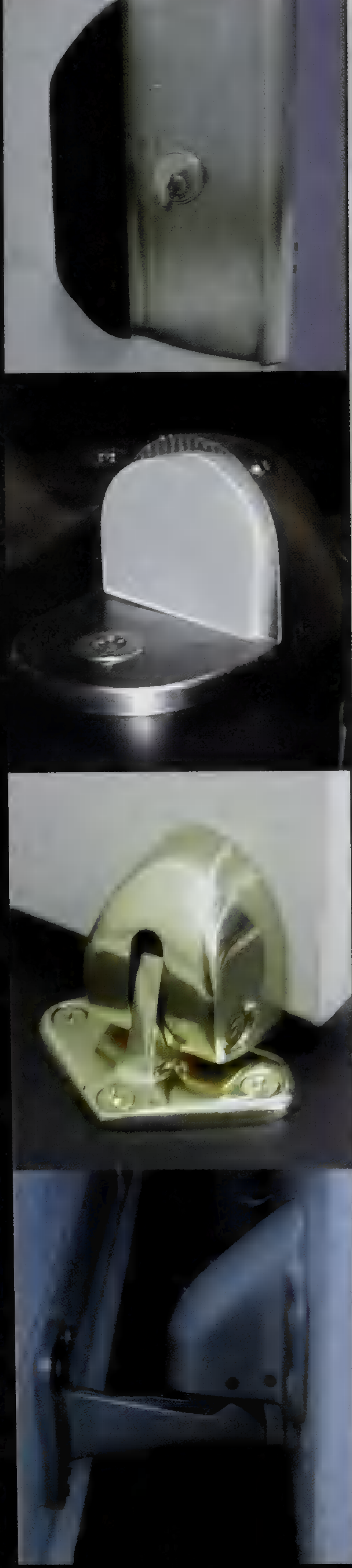
Recently housing a nightclub, the space was gutted, leaving 17-foot-high ceilings and a concrete slab floor. While some existing HVAC systems were salvaged, most components are newly installed and left largely exposed along with structural elements overhead, a theme continued from the headquarters design and throughout all the resource centers.

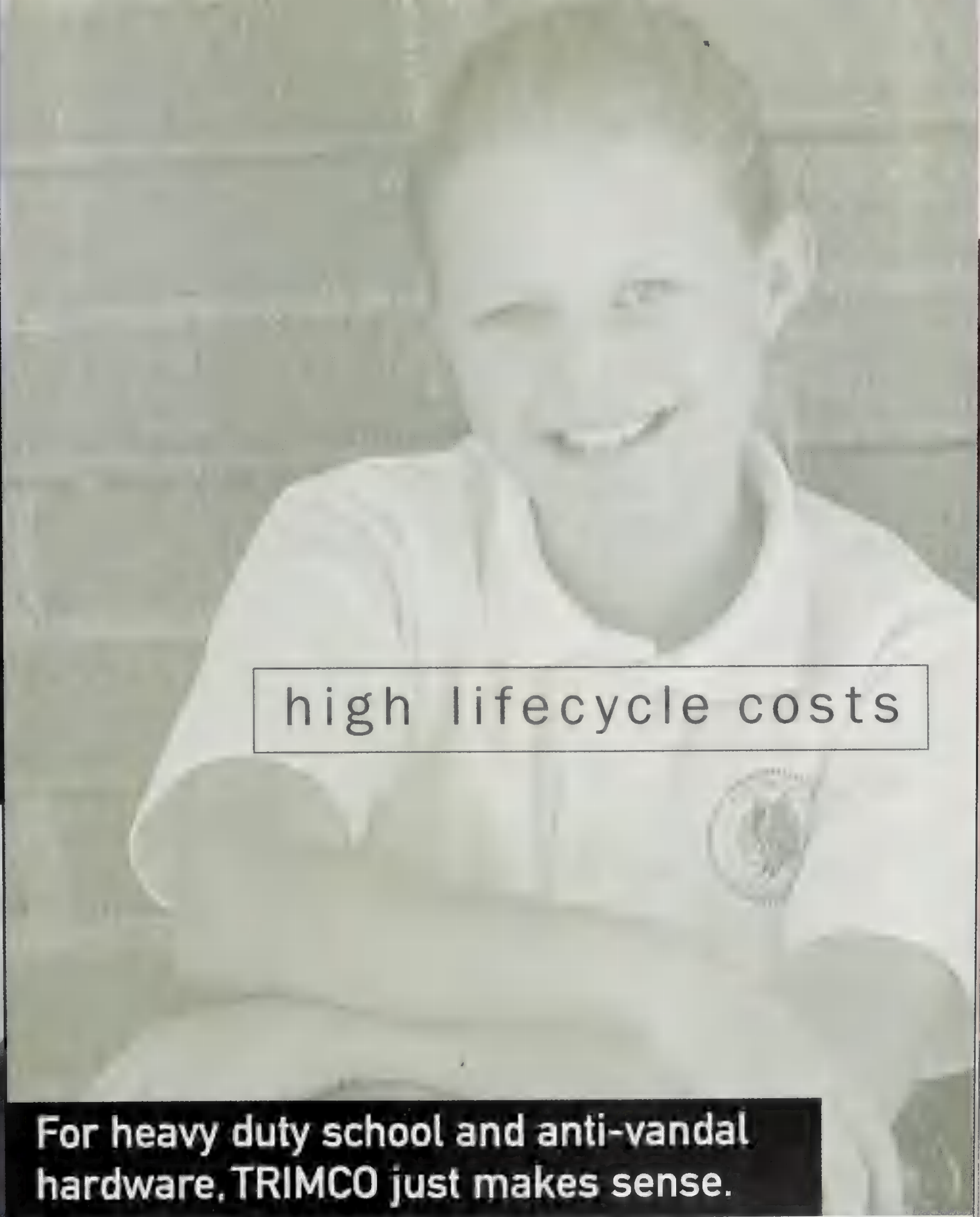
A galvanized-steel waterfall opposite the entrance was retained from the space's nightlife role. The company name is spelled out in steel letters for immediate brand recognition, while the cascading water creates consistent aural and visual interest. A Parsons table–style reception desk in front of the water feature is constructed of Texas pecan and faced with leather panels for a contemporary edge. This central space serves as a hub between meeting rooms, education areas, offices and computer stations, and furniture display areas. To one side is the so-called community center, where visitors can sit at a coffee bar, settle into lounge chairs or a sofa in front of a fireplace (made by a HON subsidiary), or meet informally at a large conference table, also made of Texas pecan. The fireplace wall is faced with reclaimed barn siding for an appropriately rustic appearance. In a Texan mode, the rug and pillows are cowhide, while dark-wood-framed furniture is upholstered in leather and suede.

LEATHER, SUEDE, STONE, AND BARN WOOD SPEAK IN A TEXAN TWANG. A DOG-TROT LAYOUT EVOKES THE LOCAL HERITAGE.

The conference table is ringed by Z-shaped steel stools designed by Martha Sturdy. Adjacent glass walls afford a panoramic view of outdoors and become a branding beacon at night. The visible HVAC system along the ceiling helps to rein in the room's expansive height, and oversize steel-wire spheres intertwined with lights add a sculptural element while whimsically referencing tumbleweeds.

An enclosed 10-seat conference room is located on one side of





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Beyond the fireplace (below) is a guest services area where mirrors take the shape of 10-gallon hats and hairdos. An oculus pierces the wall to add a sense of openness. A rough-hewn Texas-limestone wall serve as a backdrop for changing furniture displays (left) while murals of the Texas landscape flank three walls above product displays (bottom left).

the common area and is sheathed in hot-rolled steel with a blue cast. Pocket barn doors are fabricated from prominently grained Texas pecan.

To the other side of the entrance are Allsteel workstation vignettes outfitted for use by clients. A photomural depicting the Texas landscape wraps the upper portion of three walls like postcards from the frontier. The balance of earth tones and hard and soft materials—a focal wall sheathed in rough-hewn Texas limestone; minimally textured woven carpet tiles set within smoothly finished, tinted concrete flooring; oversize lounge seating and tables—brings a refined, updated ranch style to doing business in Texas. "We have strived to create an environment that facilitates interaction and networking," says Timothy Smith, Allsteel vice president of marketing services. "We hope our clients will see the resource center as the answer to those needs." ■

Sources

Paneling: *Carlisle Restoration Lumber*

Laminates: *Abet Laminati; Formica*

Carpet: *Interface*

Paints and stains: *Benjamin Moore; ICI; Richard James*

Lighting: *Lightolier*

Furniture: *Custom; Allsteel; ROOM; Chista; Martha Sturdy; Tucker Robbins*

Upholstery: *Maharam; Edelman*

Hardware: *Dorma; Hafele; Forms & Surfaces; Schlage*

Specialty surfacing, fixtures: *Ardex; Catellani & Smith*

Fireplace: *Heatilator*

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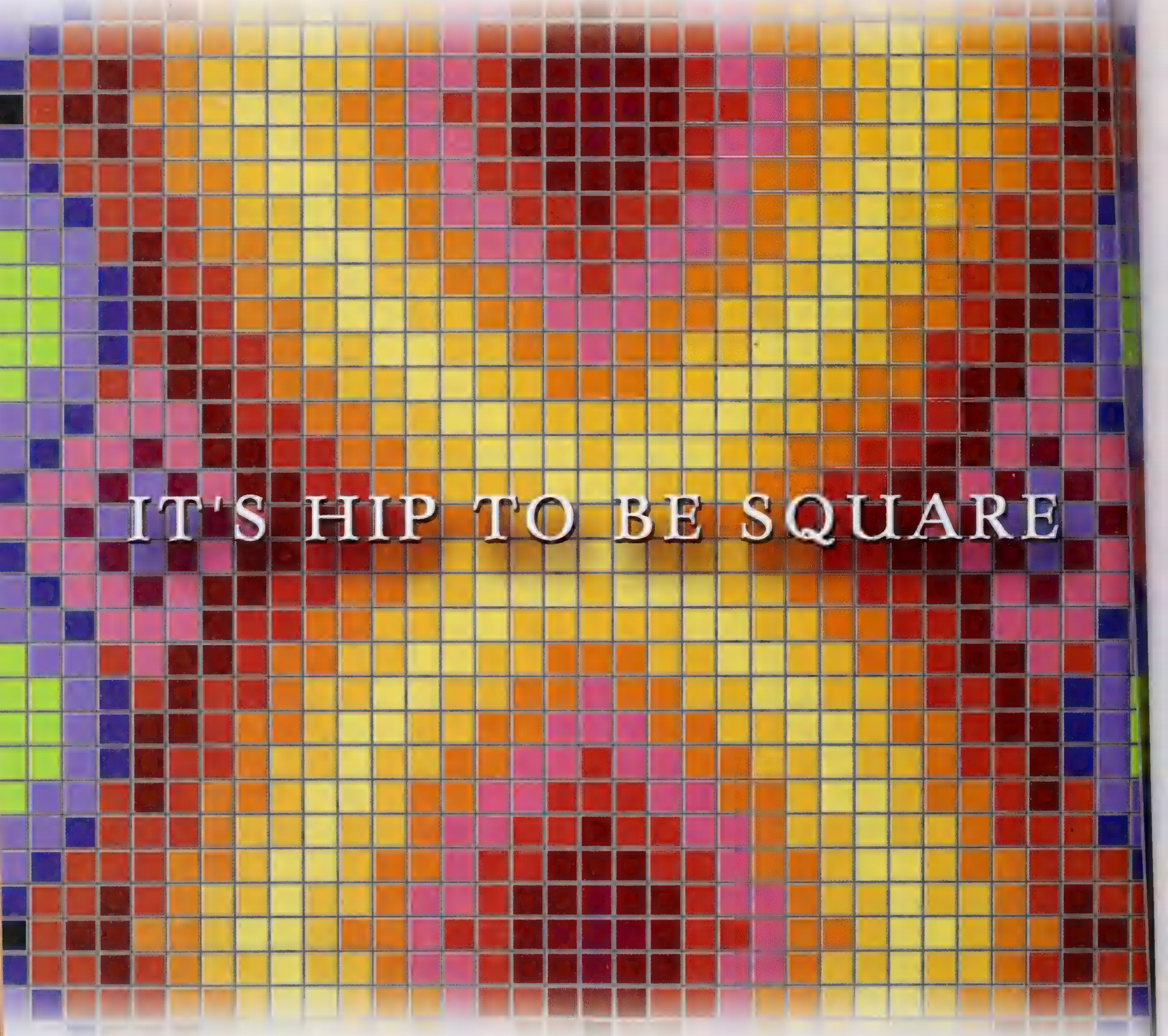

Free yourself with a color pallet that allows your imagination to run wild. Break out of conventional patterns and try a little experimentation. Check out Marazzi Tecnica's coordinating color tile lines; Architettura, Quartieri Comuni Citta', Enduro Matt and Mosaic Matt.

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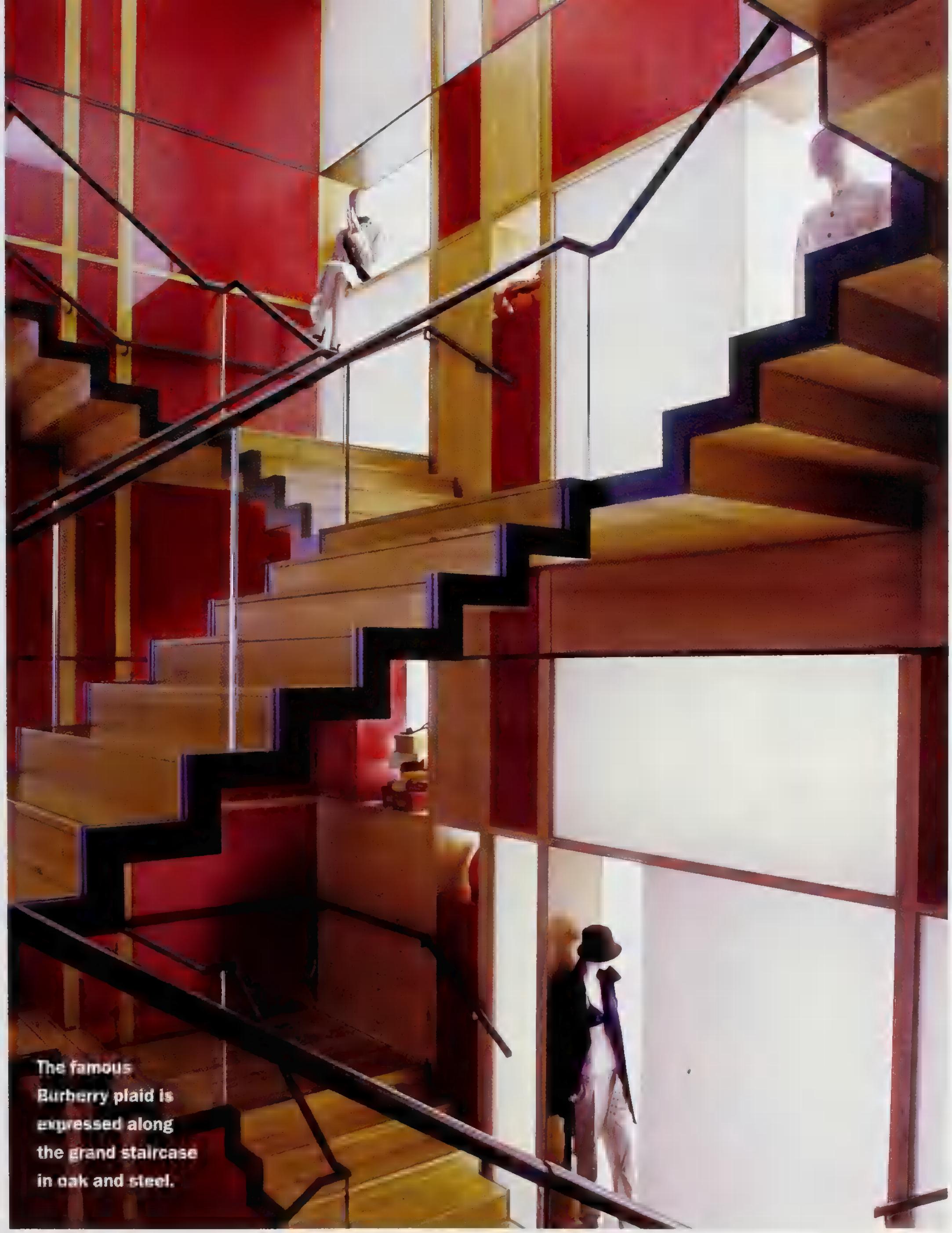


The famous Burberry plaid is expressed along the grand staircase in oak and steel.

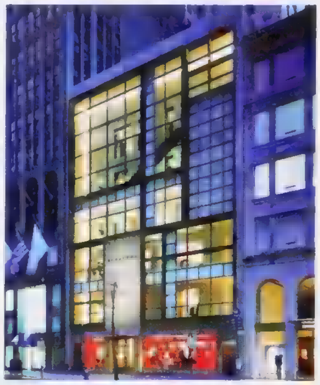
Architectural abstractions of plaids, herringbones, and pinstripes thread the traditions of **Burberry** through its new flagship

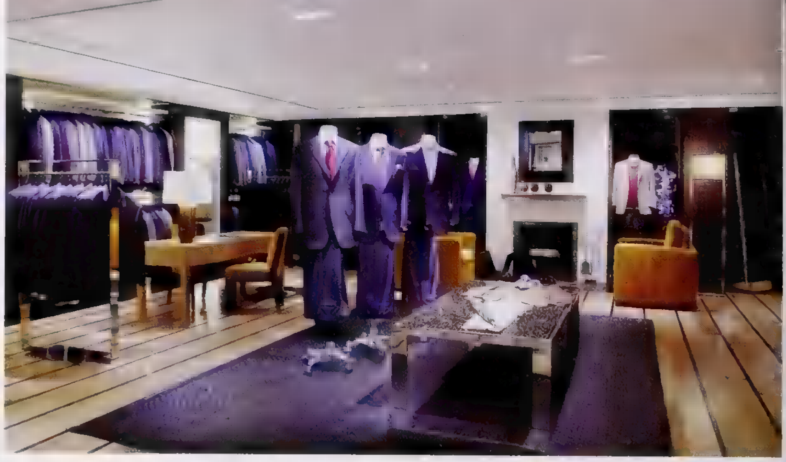
By William Weathersby, Jr.

The Burberry trench coat—with its distinctive plaid lining of camel, black, red, and white—is an icon of British fashion. Founded in 1856 by Thomas Burberry (the inventor of gabardine and later the trench coat style during World War I), the retailer has sold coats worn by Captain Roald Amundsen on his trek to the South Pole, Bogart and Bergman on the tarmac in *Casablanca*, and Audrey Hepburn in *Breakfast at Tiffany's*, not to mention legions of international travelers. Since 1997, under the guidance of new chief executive Rose Marie Bravo, Burberry has sought to leverage that legacy into a loftier position as a purveyor of a broader range of luxury clothing, perfume, accessories, and housewares.

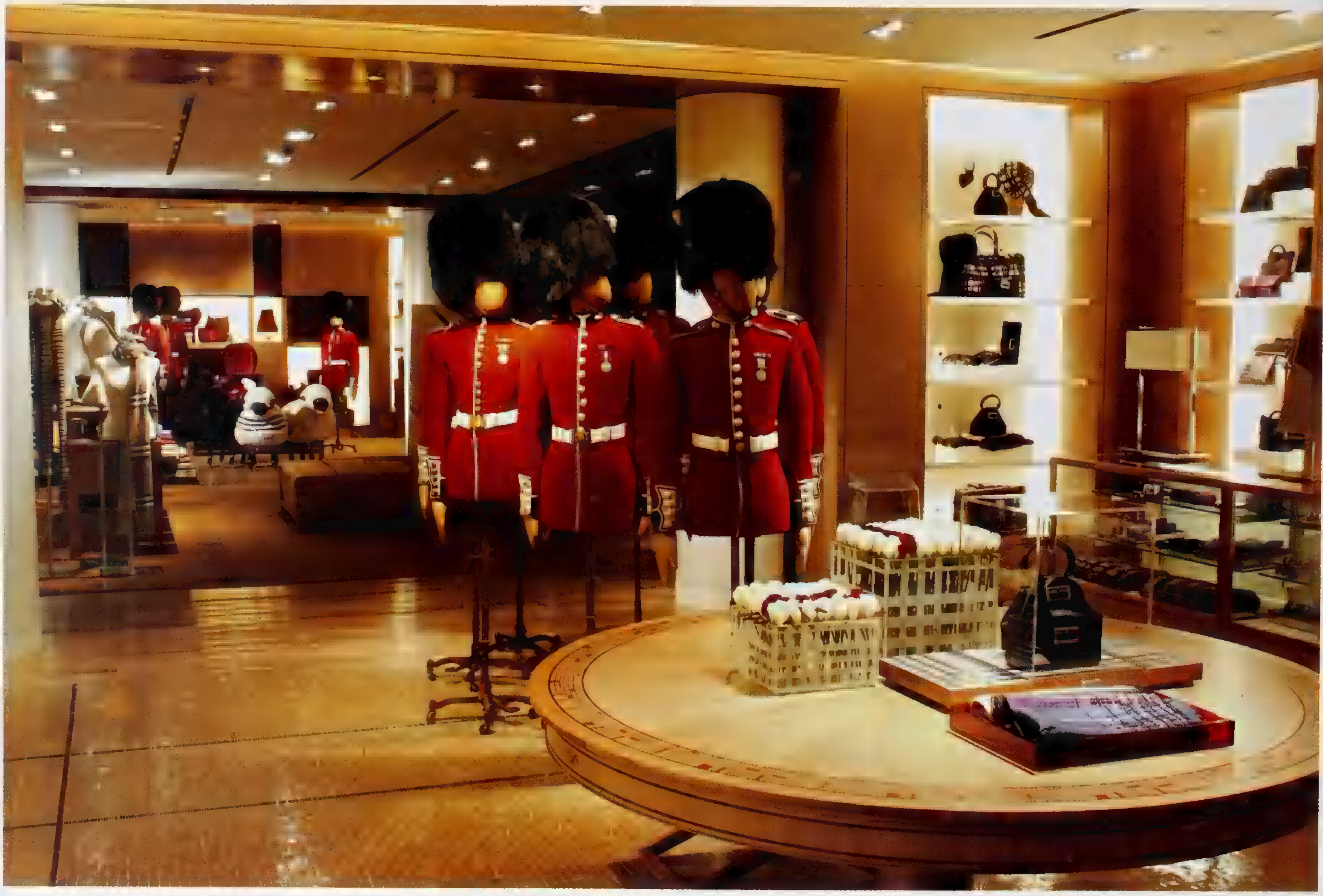
The classic Burberry crest is inscribed with the motto *Prorsum*,

Contributing editor William Weathersby, Jr., is a freelance writer based in Manhattan. He edits the lighting and interiors special sections of RECORD.





The facade, by Gensler (left), is an abstraction of the Burberry plaid in glass, stone, and burnished metal. The entry's mosaic tile floor and marquetry table interpret the same motif (below). Wood flooring in the men's suits section evokes pinstripes (right).



Latin for "forward." As Bravo explains, a centerpiece of the new business strategy is a forward-looking rollout of new flagships and the overhaul of Burberry's more than 70 existing stores. Following the opening of new locations in London, Barcelona, Orlando, Coral Gables, Florida, and New York City's SoHo, last fall the company unveiled a new flagship on Manhattan's 57th Street where the architectural and interior design details serve as their own calling card for the brand. The existing Burberry store at the site was gutted and combined with an adjacent town house to the east that had been a flagship for Escada. The resulting six-story, 24,000-square-foot Burberry store is threaded with abstractions of the trademark plaid, plus interpretations of herringbones, pinstripes, and other weaves in materials such as wood marquetry, mosaic tile, and glass. It's a haberdasher's eye peering through the lenses of engineering and building crafts.

The store's new facade, designed by the New York office of Gensler, serves as a Burberry billboard of sorts, as well as a preview of the interior collage of pattern and texture. Translating the trademark plaid into an abstracted grid of Magny Jaune stone, glazing, and bronze metal mesh, the facade animates the building and dramatically doubles Burberry's frontage on the shopping boulevard. (RECORD Building Technology will present more details on the facade's design and engineering in May.)

Inside, Gensler, the architect of record for the building core and shell, worked with retail interior specialists Barteluce Architects & Associates to weave the floor plates of the two existing buildings into a seamless whole. Replacing the roof and removing the party walls, the team inserted a new steel structural grid and tackled floors where there was sometimes a 2-to-7-inch variance in the levels of the two buildings. Sections of the ceiling were recessed and many interior walls removed to create open spaces that flow from front to back at a town-houselike scale.

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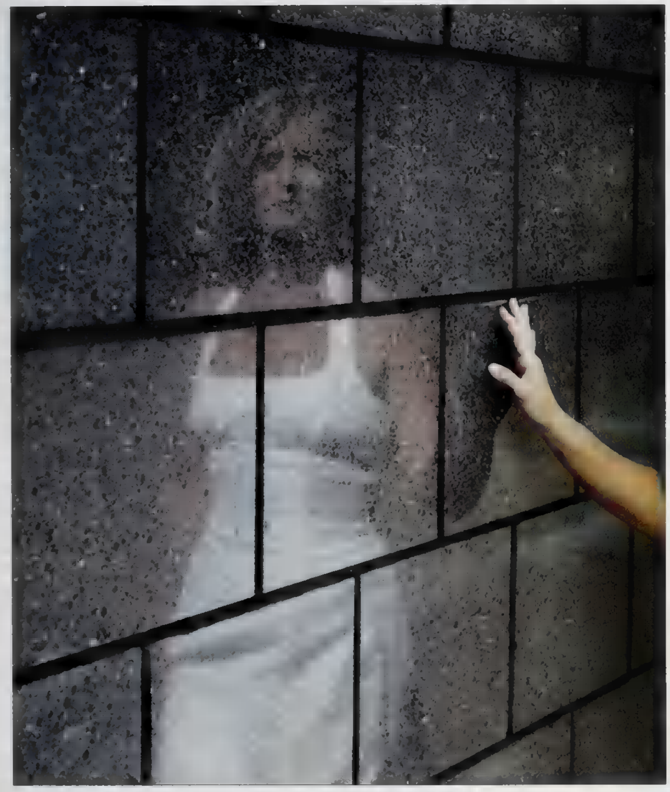

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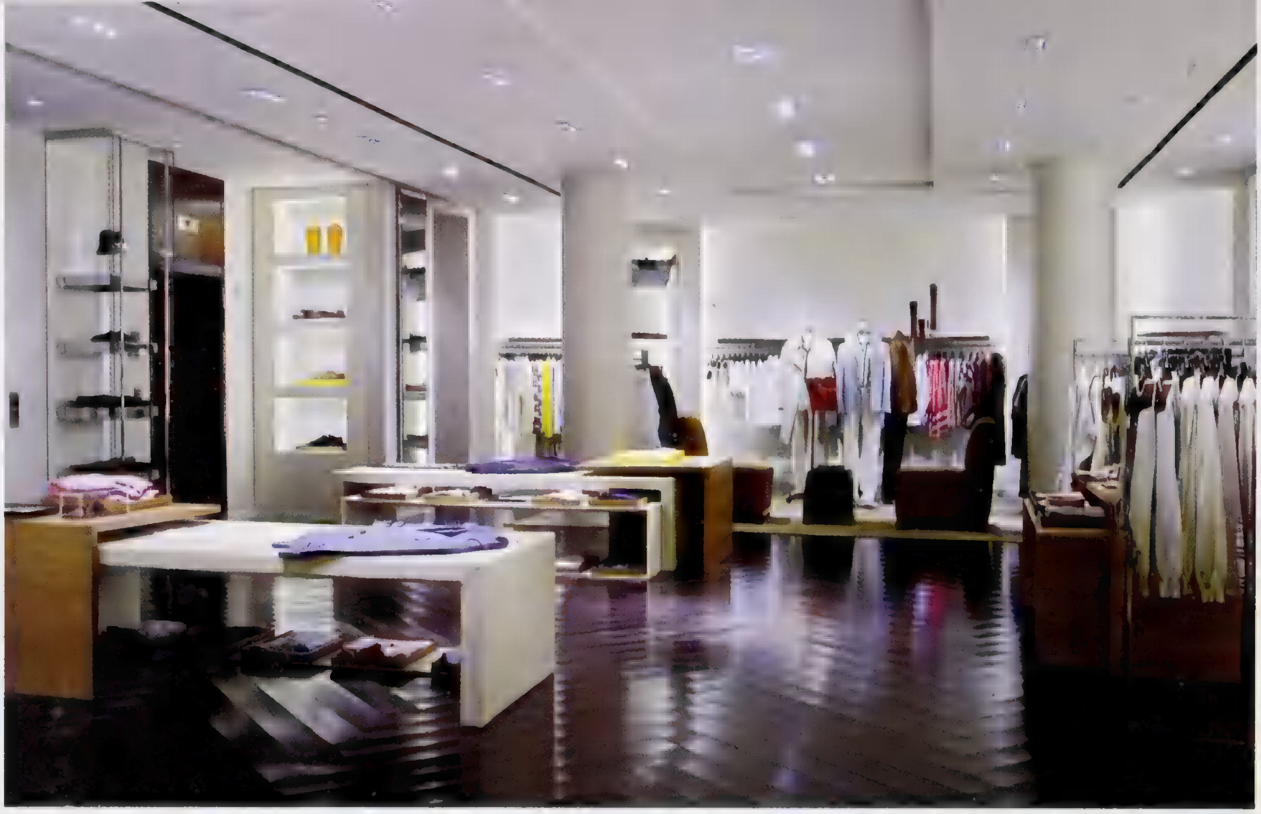

A dark-stained oak floor with a herringbone pattern contrasts with the white plaster envelope on the sixth floor (left). Furniture designed by Randall Ridless includes Lucite-framed lounge chairs (below left) and steel-based "library tables" (below right).

For interior furnishings and finishes, Burberry's in-house visual and store planning team collaborated with interior designer Randall A. Ridless in New York and Mark Pinney Associates in London to fashion spaces with the feeling of an English club. Each floor has a distinctive look, from woven-leather rugs in the men's sportswear department on level six to a red Plexiglas wall punctuated by steel cubes that hold teapots in the Mad Tea Cup café set near the facade on three.

Signaling a dash of wit regarding the Burberry heritage, the foyerlike entry is paved with mosaic glass tiles that write the plaid large. A custom wood marquetry table designed by David Linley continues the play on plaid. Beyond the accessories area, a focal point is a grand staircase whose scale is based on those found in English country houses, but translated into a modern idiom. Rising three floors to an illuminated glass ceiling, the floating staircase is a play of oak, steel, and red plaster.

Elsewhere, white oak floors and paneling evoke the buff color of the Burberry trench, while floors inlaid with accents of macassar ebony wood and amber glass lend a bespoke, tailored feeling. Furnishings custom designed by Ridless include parchment and polished steel tables, Lucite lounge chairs, and sculptural, ebony-edged vitrines.

"It's not always easy to translate the look of fabric or fashion details to an architectural medium," Ridless says. "We wanted the connections to be subtle rather than literal, with the richness coming from the materials and craftsmanship." Mad for plaid, Burberry makes its mark escorting architectural motifs past nostalgia toward a modern edge. ■

Project: *Burberry, 57th Street, New York City*
Architect of record: *Gensler*
Interior architect of record: *Barteluce Architects & Associates*
Interior designers: *Randall A. Ridless; Mark Pinney Associates*
Lighting designer: *Johnson Schwinghammer*

Sources
Cabinetry, woodwork: *Modern Wood Crafts*
Wood flooring: *Architectural Systems*
Furniture: *Custom; David Linley*
Hardware: *FSB; 555 Design*

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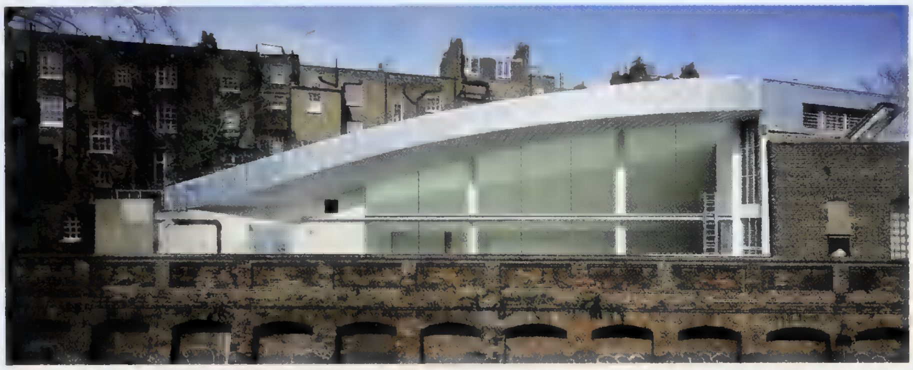
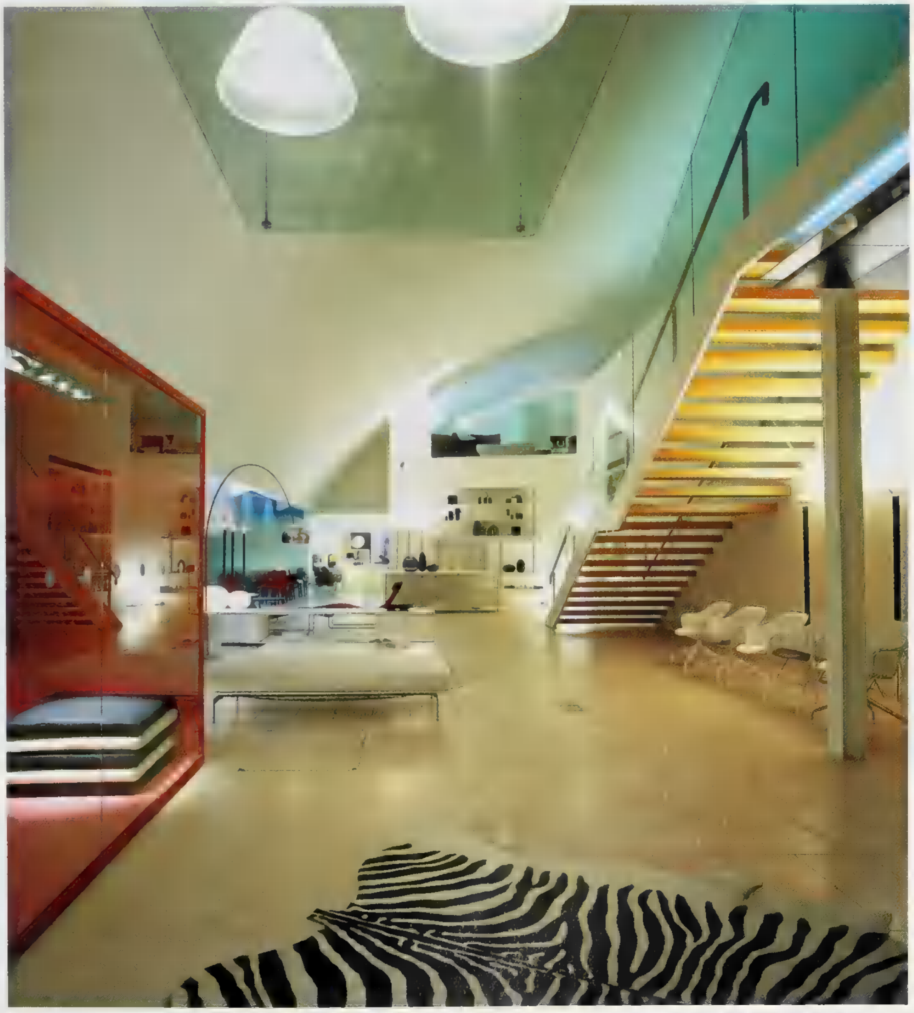
ohn Pawson and Antonio Citterio team to transform a former car dealership into a showplace for **B&B Italia**

By Hugh Pearman





The swooping metal roof hints of curves within the B&B Italia showroom (above). Inside, a glass-framed staircase with oak treads ascends from the Portuguese white limestone floor (right).

Renowned as the éminence grise of modern Minimalism, British architect John Pawson is in great demand by retailers seeking his particular brand of what he describes as (quoting a Japanese phrase) "exquisite restraint." He has become virtually the house architect for Calvin Klein around the world and is at present working on a new Cistercian monastery in the Czech Republic. But how can Pawson's sometimes startlingly austere approach mesh with the more mainstream Modern design tradition of the manufacturer B&B Italia, which sells upscale furniture through showrooms featuring elaborate room settings?

The answer, as seen in B&B's combined London showroom and U.K. headquarters, is by pairing the architecture of Pawson with the interior design sensibilities of Antonio Citterio, who—as is the Italian way—studied architecture before embarking on a career as a leading furniture designer. With much of his output made and marketed by B&B, Citterio's stamp would be on this interior anyway: His furniture and lighting designs are strongly architectural. His presence in London also provides a degree of continuity with other showrooms for the company around the world, most of which Citterio had a hand in designing.

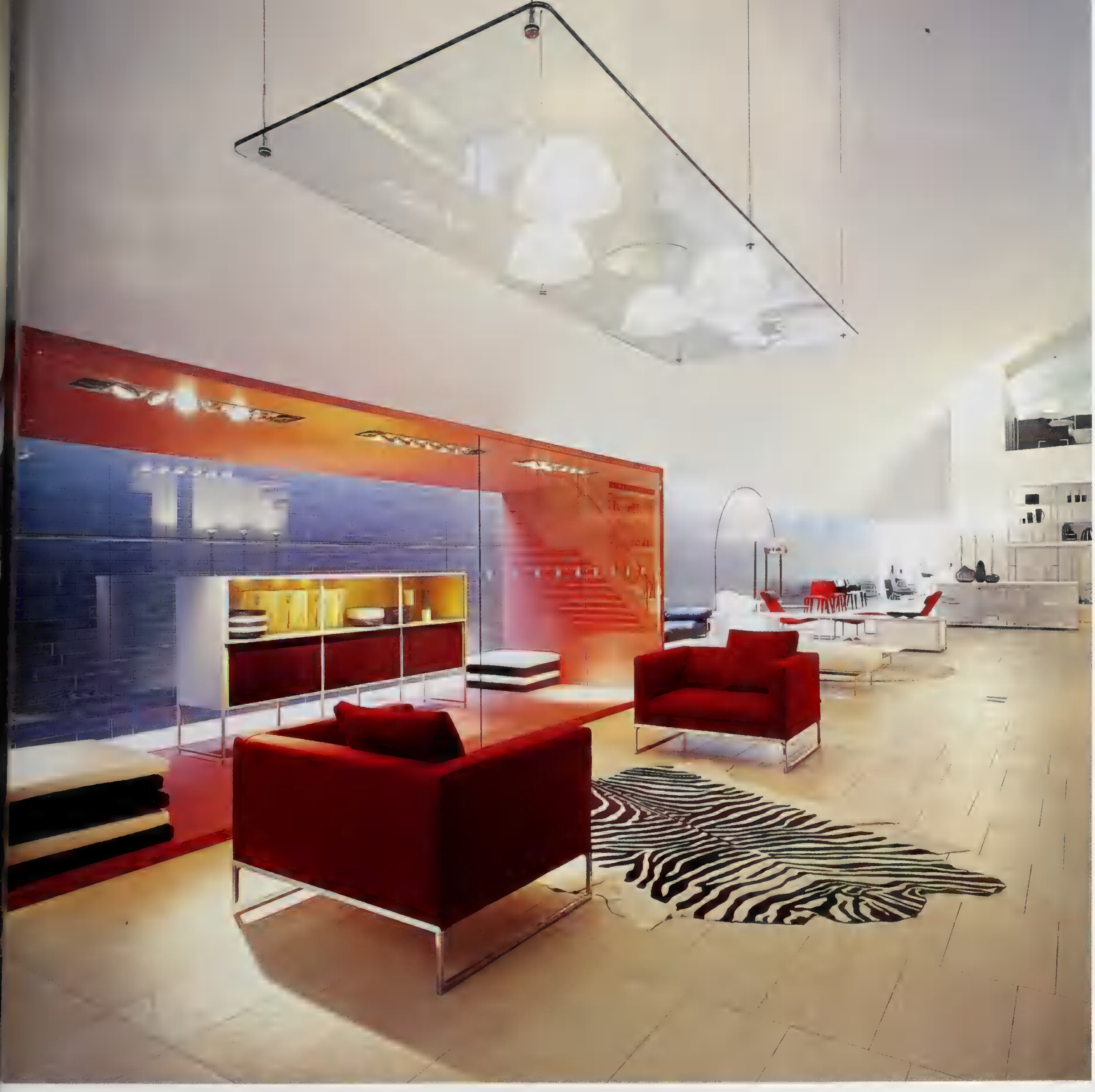
Pawson is not typically yoked with anyone, still less often imposed upon by a corporate ethos—which may explain why this is not one of his better-known recent interiors. But the outcome, by two men from very different backgrounds who are near-contemporaries in their early 50s, is architecture of a high order. Pawson played the leading role. He made all the big moves and designed most of the details, including finishes. Citterio then dressed the space, employing largely freestanding arrangements of furniture and some unusual hanging rectangular glass panels currently used to display downlights by Philippe Starck. The project architect was Denton Corker Marshall, with a team led by Stephen Quinlan.

To Pawson fell the task of making sense of an extraordinarily awkward site: long, thin, and landlocked with a relatively small entrance

Hugh Pearman is a freelance writer based in London. He frequently writes for RECORD *about European architectural and interiors projects.*

Project: *B&B Italia, London*
Architect: *John Pawson and Antonio Citterio, with Patricia Viel*
Project architect: *Denton Corker Marshall—Stephen Quinlan*
Client manager: *David Zimber*
Contractor: *John Richards Shopfitters*

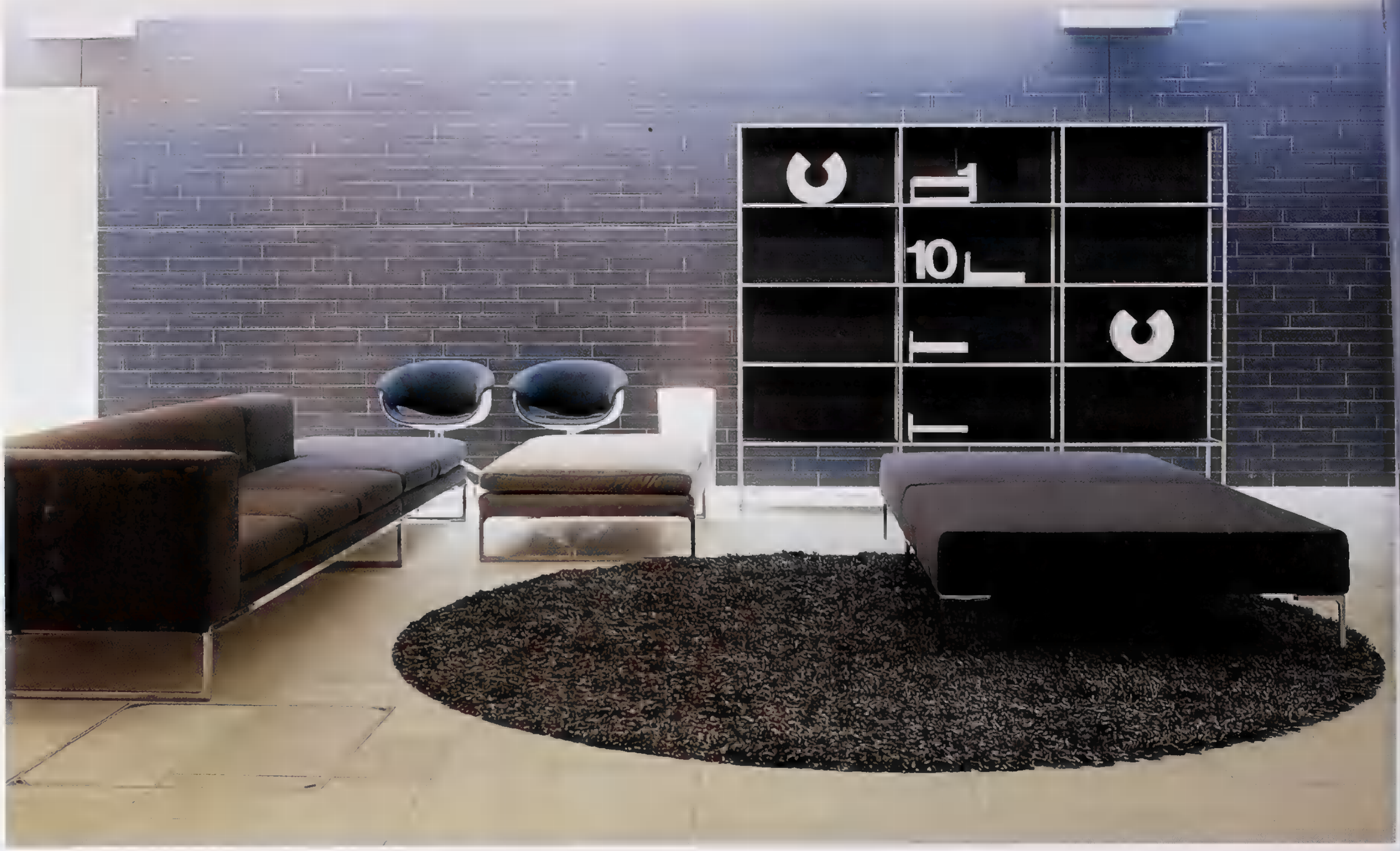
Some furniture vignettes rest atop stacks of oiled natural oak (above). The long, vaulted space is a versatile backdrop for changing furniture displays (near right). Its volume is screened by an angular foyer (far right). Roomlike orange containers showcase new lines (opposite).



facade at one end, and the other—400 feet away—abutting a sunken railway line of London's subway system. Nor could any windows be placed along the flanks of the building because they adjoined properties to either side. Despite such constraints, the location (previously used as a Porsche dealership) is prime. A showroom frontage in the area, known as Brompton Cross, a haven of upmarket design and fashion shops in an affluent neighborhood close to the South Kensington museum district, is invaluable to a company like B&B Italia.

Spatially, the showroom is a tour de force. Patrons arrive in a double-height lobby, its limestone-framed glass frontage forming part of a larger trabeated composition that includes another store unit alongside. From this reception lobby, a long ramp of oak set in a steel tray gently descends to the main showroom floor through a single-height space. Set beside and slightly below the ramp is a linear display area. From this compressed introductory space, one is released into the main double-height showroom, dominated by a bravura column-free curving and tilted roof that is plastered and tinted white. Light, both daylight and electric, is brought into the showroom through glazed slots running along each edge of the roof. A mezzanine gallery runs along the higher side of the space. The composition terminates with a glazed, angled end wall where the building abuts the sunken subway tracks.

Materials are simple—limestone flooring, slate tiles cladding the side wall, varnished oak on the open-tread stairs to the mezzanine, glass and stainless-steel balustrades, and white-painted plasterwork. Display areas on the main floor are indicated by low platforms of dark-stained oak, interspersed with room-size freestanding display cabinets with a



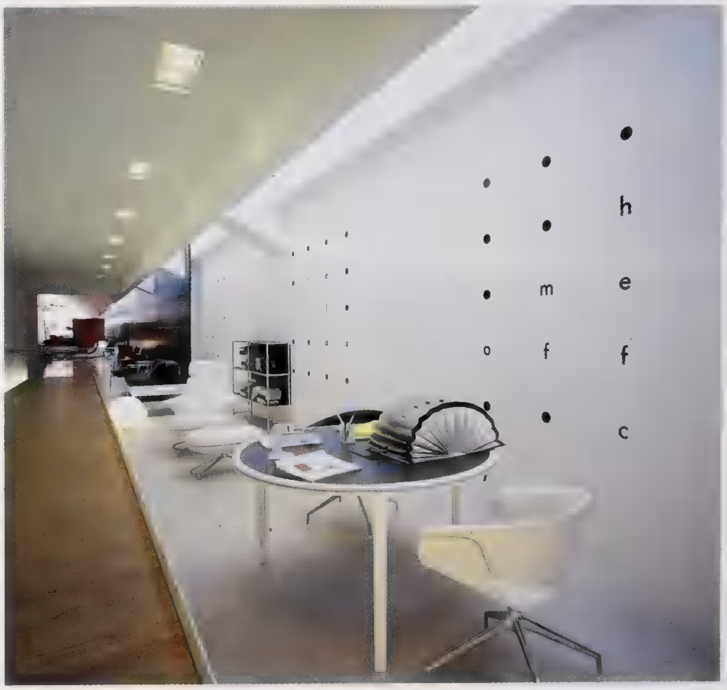
shiny orange finish. Thematically, the display is arranged by Citterio as a series of "atmospheres," or living areas—sleeping, living, dining, and breakfast—plus a section tucked under the black-ceilinged mezzanine devoted to Citterio-designed kitchens made by Arclinea. Another section at one end of the main showroom space is devoted to Flos lighting.

The display on the mezzanine level is again Citterio-designed furniture, but this time it's a collection of his more conservative, predominantly timber-based pieces for Maxalto, a B&B subsidiary brand that sells well in Britain and France.

The zoning of the showroom creates a rhythm that breaks up the long main space while preserving its drama. The presence of many nodding forms of Achille Castiglione's famous Arco lamps reinforces the theme of the pure curve. Offices are tucked away behind the scenes; the showroom functions as B&B's U.K. headquarters for both retail and contract sales, but this activity is not allowed to spill out into the public areas.

For its showrooms and offices worldwide, B&B Italia's policy is to enlist the finest architects from each country where it is represented while maintaining a corporate ethos through the presence of Citterio. In the case of this extraordinary London showroom, mutual respect is apparent. It is very John Pawson in its calm simplicity and play of light. Yet in its bold consumerist aspects it is also recognizably Citterio. This collaborative work is something of a hidden gem. ■

Various furniture lines are distinguished by a change in the material serving as a foil, such as dark tiles (above) or a painted wall graphic and stone floor inset (below). Citterio, who also designs furniture, styles the showrooms.



Sources
Furniture: *B&B Italia; Maxalto*
Lighting: *Flos; Via Bizzuno*
Tiles: *Ascot*

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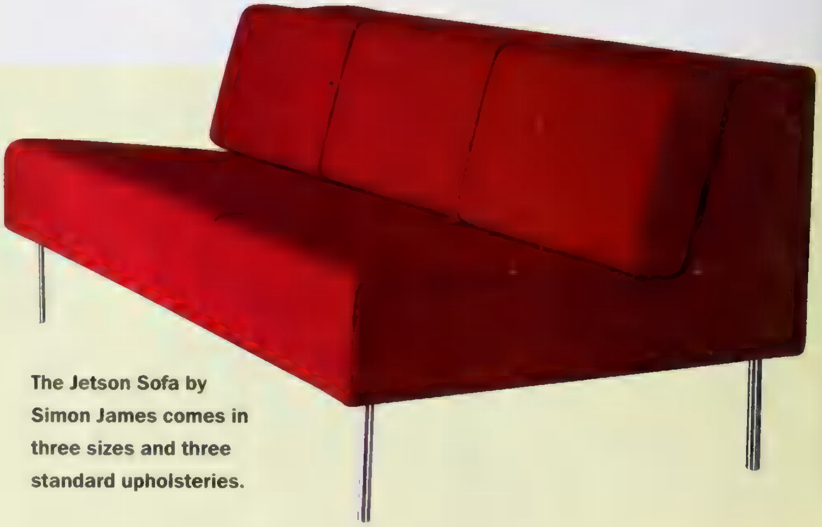
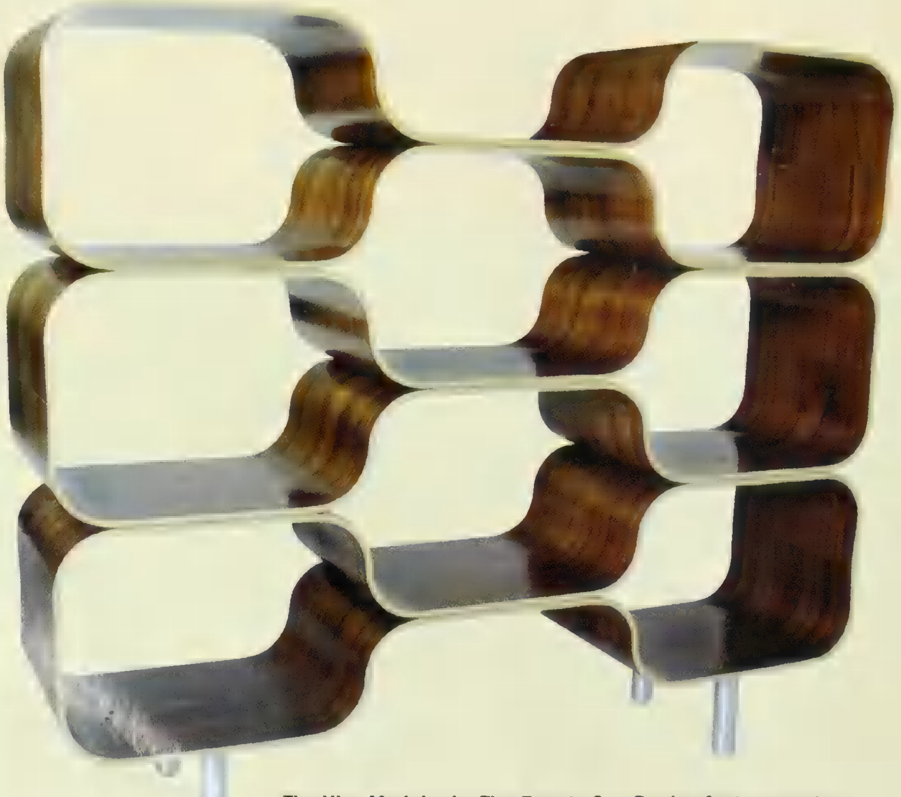
On a smaller scale, **architects are designing furniture** for two inventive companies, ray20 and TRUCK

ray20, Long Island City, New York

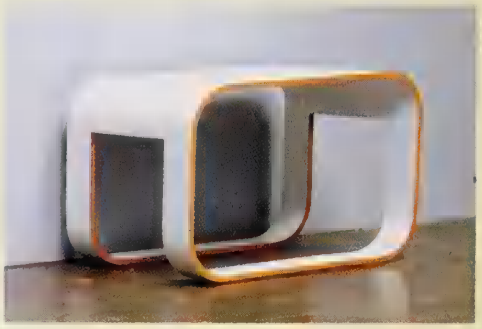
Part of the ray20 stable of designers, New Zealander Simon James (above left) studied spatial design before focusing on furniture full-time. New York City artist Chris Ferebee and design journalist Laurice Parkin (above right) collaborate on furniture with sinuous architectural curves under the name Five Twenty One Design. Run by architects, ray20 can be contacted at www.ray20.com.

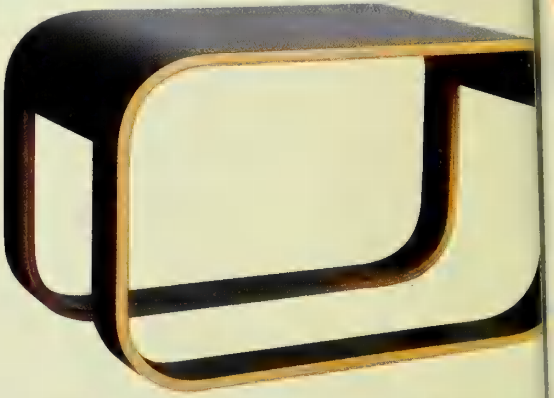


The Jetson Sofa by Simon James comes in three sizes and three standard upholsteries.



The Hive Modular by Five Twenty One Design features walnut veneer over molded plywood. Legs are turned aluminum.





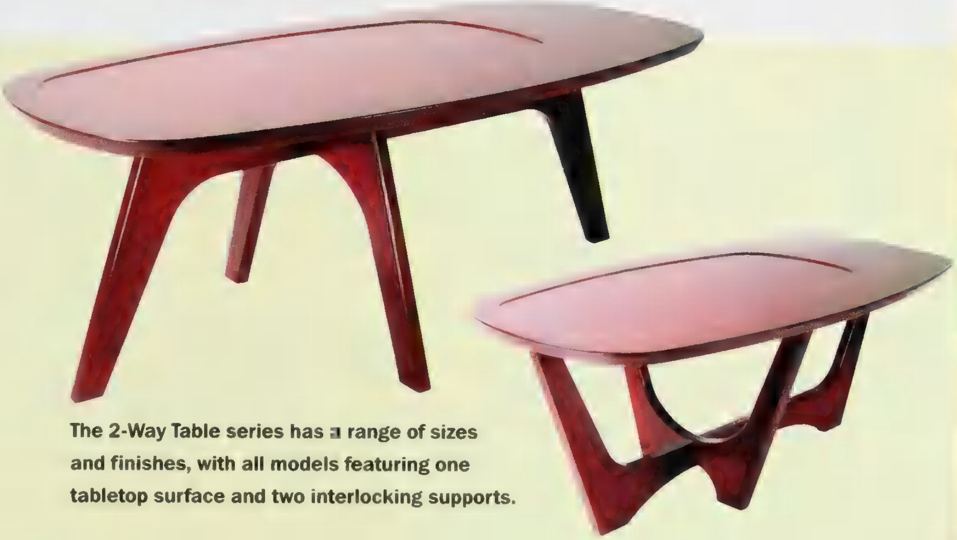
James's curving L4 Table is available in white lacquer or dark-stained veneer with exposed plywood edges.

urniture designed by architects" calls to mind limited editions for well-heeled clients on one hand, or feats of imaginative assembly forced by meager budgets on the other. In the New York City area, wo new companies founded by architects—ray20 and TRUCK product rchitecture—are bringing an entrepreneurial edge to the creation of urniture and interior accessories, attracting retail customers with a range f affordable, innovative designs.

Founded last year by architects Cheri Caso and Paul Withers, ay20 is a new furniture source whose platform is a quarterly catalog. Vorking with a global network of designers—including Swedish architects Jonas Lindvall and Marten Claesson—the duo curate the collection as a catalog-cum-compendium; besides products and prices, there are reading lists, short essays on topics like Scandinavian Modern, and odes to such Great Design Moments as the inventions of Velcro and the Bikini.

TRUCK, meanwhile, ventured out of the gate in 2001 as a spin-off of Rogers Marvel Architects. "The furniture designs grew out of our retail interiors work for Kate Spade," says principal Jennifer Carpenter. With leather provided by Spade, the studio first designed a set of molded calfskin place mats, and product lines quickly expanded. The pieces are available at retail stores nationwide. *William Weathersby, Jr.*

TRUCK product architecture, New York City
Architects Jonathan Marvel, Jennifer Carpenter, and Rob Rogers (above) chose the name TRUCK for its connotations of reliability and functionality. Product architecture describes their approach to materials and form. The products are all made in the U.S. by craftspeople from specialties including glassmaking, leatherworking, and scientific-lenscrafting. Go to www.the-truck.com.



The 2-Way Table series has a range of sizes and finishes, with all models featuring one tabletop surface and two interlocking supports.

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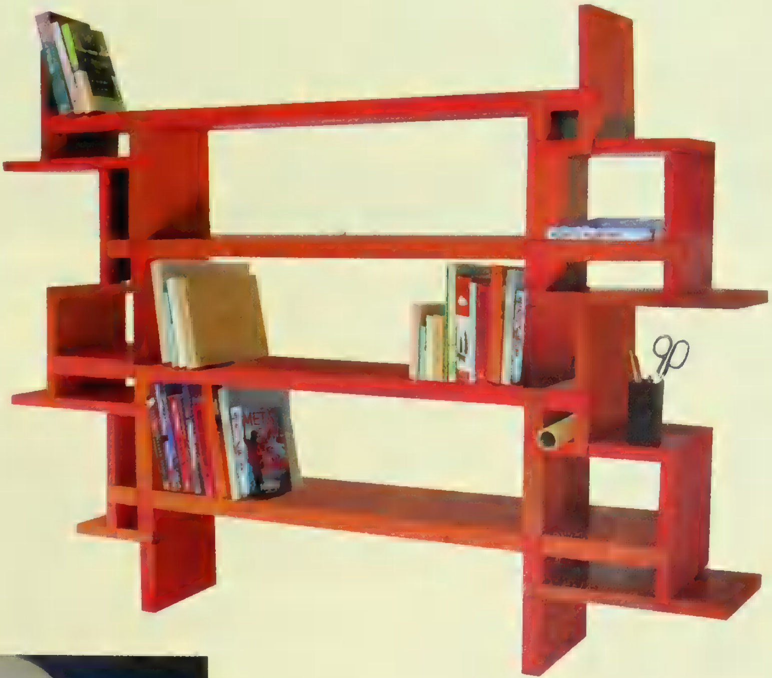

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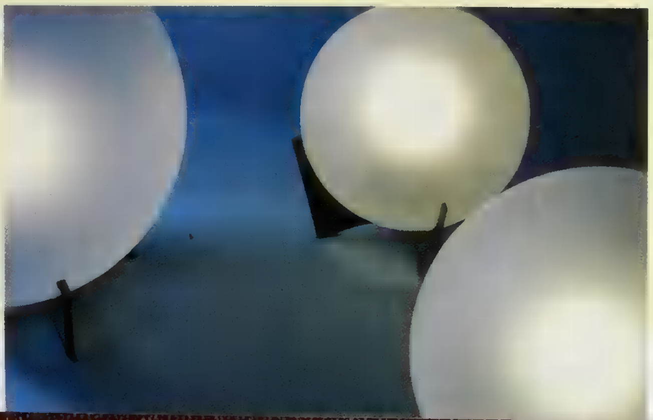

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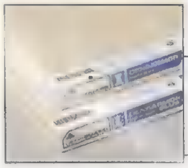

Interiors Products

▸ Ball chain chic

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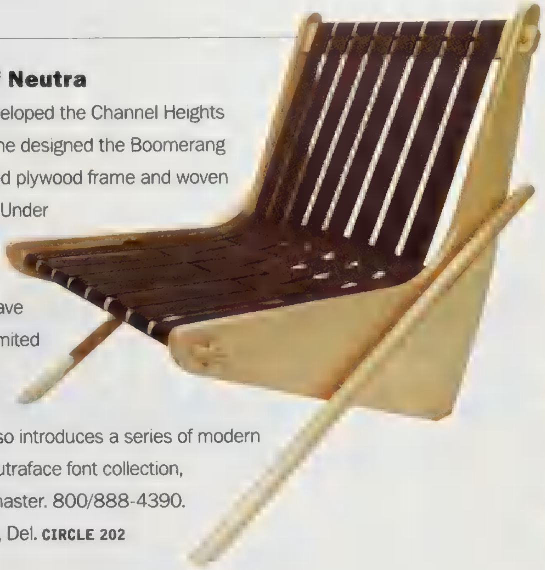
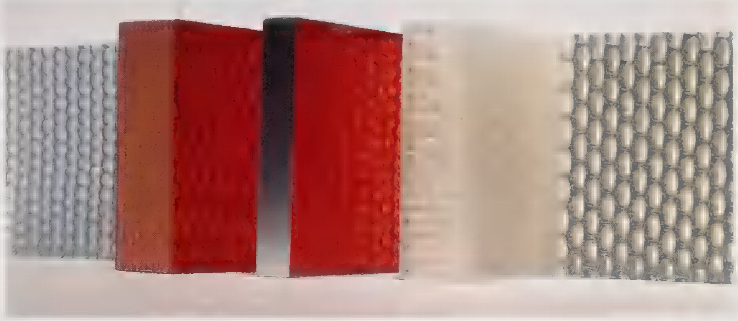
▸ The new face of Neutra



When Richard Neutra developed the Channel Heights Housing project in 1942, he designed the Boomerang Chair, featuring a veneered plywood frame and woven web seat, for its interiors. Under the guidance of Dion Neutra, House Industries and Otto Design Group have collaborated to make a limited edition of chairs available in either genuine walnut or maple finish. House also introduces a series of modern throw pillows and the Neutraface font collection, inspired by the Modern master. 800/888-4390. House Industries, Yorklyn, Del. **CIRCLE 202**



▴ Edgier panel offering

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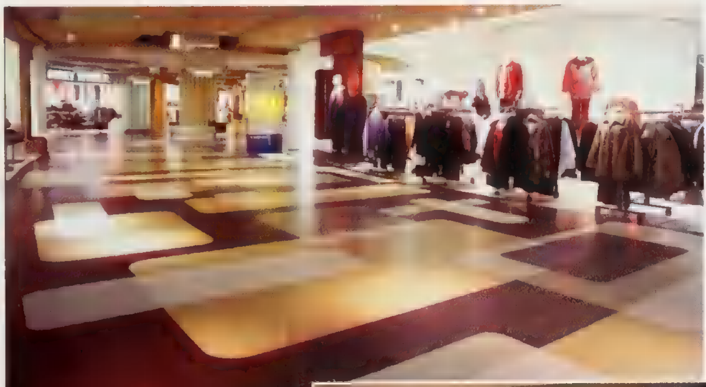
Showroom of the Month Boffi, Los Angeles

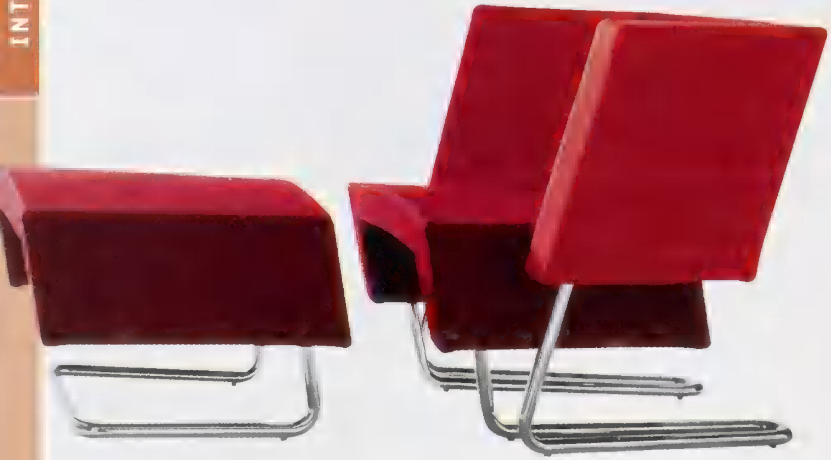
Italian architect Piero Lissoni (above) transformed a former furniture and piano showroom built in the 1920s in Santa Monica, California, into a dramatic, Minimal space for Boffi's contemporary kitchen and bath products. Lissoni, who also serves as Boffi's creative director and premier product designer, opened up the 10,000-square-foot space by adding skylights and partially carving out the second floor to allow views of the area below. The ground floor offers seven complete kitchen displays, while the upper floor offers 10 bathroom installations with staff offices located at the rear. A shiny black epoxy coating on the ground floor offsets the other materials used for the showroom and its products on display, including steel, aluminum, matte and glossy lacquer, wood, and stone. Three sweeping expanses of glass panes on the facade serve to bring both sunlight and passersby into the new showroom. 310/458-9300. Boffi Los Angeles, Santa Monica, Calif. **CIRCLE 201**



▴ Hip to be square

Over 350,000 square feet of Amtico flooring was used as part of the refurbishment of a three-story Karstadt department store in Mülheim-Heissen, Germany, designed by Chicago architect Jordan Mozer and Interstore B. Heiden. The project includes more than 105,000 square feet of the subtle iridescent Century product in pearl and copper, as well as a selection of Amtico's Design Colors that create the retrostyling on the 20' wide walkways. 800/370-7324. Amtico International, Atlanta. **CIRCLE 204**

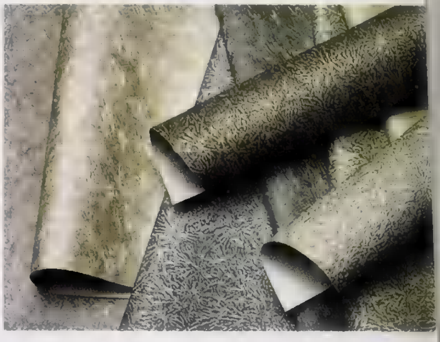
Interiors Products



▲ Ups and downs

An eye catcher at last year's Milan Furniture Fair and Promosedia chair exhibition, Ron Arad's RON-ALDOup and RON-ALDOdown chairs express the creative spirit of their designer. The chairs feature a flexible chrome-plated steel structure in which the seat and back appear to be independent of one another. The upholstery comes in fabric, leather, or Alcantara, and the optional footrest can be used as an alternative seat, transforming the chair into a modern chaise longue. 415/925-2701. Leif Petersen Inc. International Furniture, Larkspur, Calif. **CIRCLE 205**

► Engraved walls



Intaglio, named after the term—derived from the Italian *intagliare*—which means to cut or engrave, is a collection of vinyl wall coverings developed by designer Lori Weitzner for Pallas Verticals. The three designs in the collection are Type II, 54" wide, 100 percent vinyl, 20-ounce wall coverings for contract and residential applications. Crossings is inspired by a woven jacquard in the Pallas Collection, Pleats Please has the 3D look of pleated silk, and Velveteen emulates the look of crushed silk velvet. 800/4-PALLAS. Pallas Textiles, Green Bay, Wis. **CIRCLE 206**

► Wood-grain laminates

Lamitech has increased its product line with the addition of nine new alternatives in wood grains for the American market, including Cherry, Oak, and Maple veneer. The laminate's post-formability permits rounded and elliptical edges for numerous possibilities in kitchens, baths, and commercial and institutional applications. 800/922-9692. Patrick Industries, Mishawaka, Ind. **CIRCLE 207**

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Interiors Products

▼ Haute couture coverings

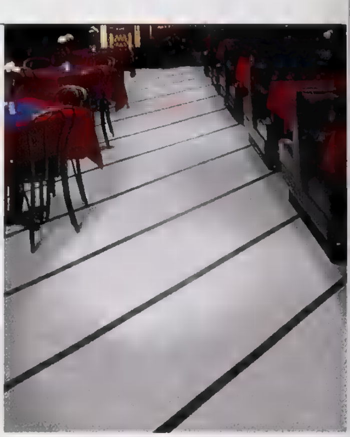
The Glam Collection, Pollack's new upholstery and window fabric collection, presents a range of materials for dressing today's interiors with a nod to the world of haute couture. The collection's satins and silks, velvets and herringbones, bouclés and frisés can work in an array of contract projects from casual to sophisticated. The collection of 19 fabrics ranges from the tailored, suitlike weave of the Suave upholstery to the acetate/silk blend of the Bewitched window covering. 212/627-7766. Pollack, New York City. **CIRCLE 208**

◄ Sitting on the dock

Inspired by techniques used in the construction of wooden docks, the Dock Chair Series is comprised of ergonomically designed wood slats that are laminated to a molded wooden frame. Designed by Espen Voll and Tore Borgensen of Oslo, Norway, the high-back-stacking and low-back-lounge chairs feature a shell of molded birch-ply with walnut or oak veneer, legs of satin chromed steel, and an optional upholstered seat and back cushion. 416/762-8129. SkyPad, Toronto. **CIRCLE 209**

► Hiding your tracks

CortinaStone features 14 new colors with a marble design that are part of Azrock's premium VCT line. Ideal for heavy traffic applications, CortinaStone's marbling effect helps hide slight subfloor problems as well as wear and tear from traffic. A subtle checkerboard effect can be achieved when alternating tiles are installed with a quarter turn. 800/USS-TILE. Domco Tarkett Commercial, Houston. **CIRCLE 210**



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INTERNATIONAL DESIGN COMPETITION

ST. MARK'S COPTIC CANADIAN VILLAGE

St. Mark's Coptic Orthodox Church, Toronto, Ontario, Canada, invites Architects, Designers and Multidisciplinary Teams to participate in an open anonymous international design competition. The competition includes a campus master plan and the basic architectural idea of a Cathedral to seat a congregation of approximately 2000, second Church to seat 1000, Bishop's residence, academic school, day care, community centre, museum, retirement home, senior citizen apartment building and office building.

The project is envisioned to create a land-mark and state-of-the-art design that blends traditional concepts with all its historical and spiritual values, providing an idyllic space of peace, serenity and beauty; a symphony of shape, texture and colour expressing the religious aspect of the Christian Coptic Orthodox faith and tradition, yet in a modern vocabulary. The main objective of the competition is to achieve a layout of the proposed Village with appropriate spatial relationships of its components on a city block of twelve acres at the entrances of the Town of Markham and the City of Toronto, Ontario.

The Copts are the descendants of the ancient Egyptians with a history dating back to the times of the Pharaohs. They were converted to Christianity by St. Mark the apostle at the beginning of the Christian era and played a prominent role in the formation of the early Christian doctrine. In recent years there has been considerable emigration of Copts to North America and the Toronto Coptic community has grown rapidly. The Church is the central focus of the Copts' sense of identity, faith, and communal support.

St. Mark's is the first Coptic Orthodox Church established in North America, and this Project celebrates its fortieth anniversary. The congregation hopes for a sublime expression of their faith, traditions and spiritual values in a contemporary architectural vocabulary.

Website active March 5, 2003
Registration closes April 15, 2003
Submission deadline June 30, 2003
Results published in the Architectural Record
Registration forms and information can be obtained from
the competition website at www.StMarkCCV.com
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New Products

Baseball-size hail, hurricane-force winds, termites, fungus, and the usual scorching sun and freezing temperatures of the seasons are just a few of the challenges faced by the manufacturers of **roofing and siding** products. Today, offerings such as **reflective roof membranes** are expected to provide greater energy performance, in addition to their role in thermal and moisture protection. *Rita F. Catinella*

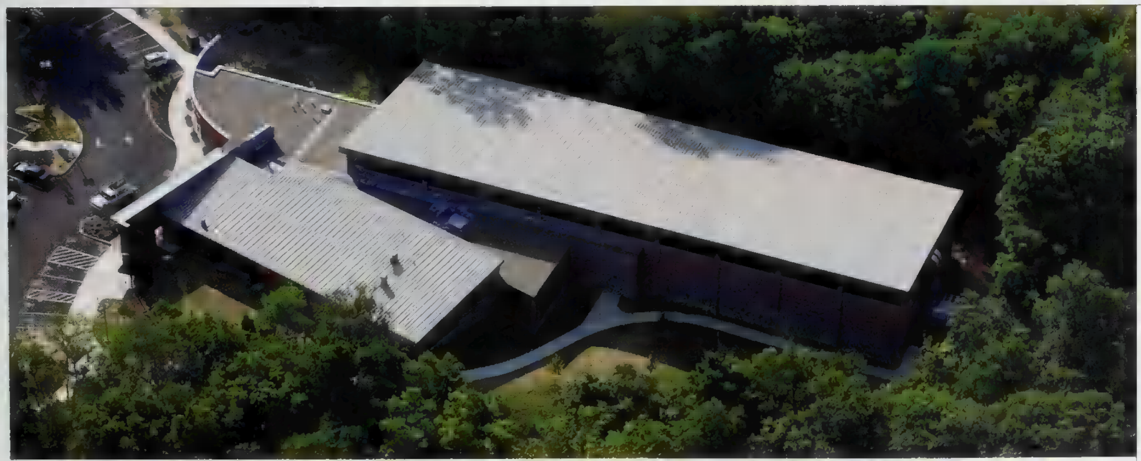
Exterior siding helps keep new medical office building on budget

To keep the Providence Holy Cross Medical Building project within a $150-per-square-foot budget, SmithGroup California selected materials such as Exterior Insulation Finishing Systems (EIFS) and corrugated aluminum for the exterior siding. The use of these siding materials in combination with simple detailing helped the designers bring the project in under budget at $144 per square foot.

The 24,300-square-foot medical building, located within a hospital campus in Mission Hills, California, features one elevation facing the main hospital, one facing the industrial plant for the campus, and other walls that enclose new courtyards or in-between spaces. The design team at SmithGroup felt the combination of EIFS by Dryvit and painted corrugated aluminum from Alcoa Cladding Systems would create a richer building that could respond to these different conditions. EIFS were used on the south side, facing the hospital, while painted corrugated aluminum, which costs about the same as EIFS, was used on the north side, which faces the industrial plant. The walls that face the courtyard areas feature both materials. Instead of capping the corners where two planes of corrugated aluminum meet, the designers developed a welding detail that allowed the material to be mitered.

Corrugated aluminum and EIFS offered an affordable siding choice.

One advantage to using EIFS was the bevel top edge, which permitted a monolithic wall without visible flashing (draining is behind the parapet). Another advantage was the ability to express long, continuous wall surfaces without the undulation and imperfections associated with traditional stucco. 800/556-7752. Dryvit, West Warwick, R.I. **CIRCLE 211**. 770/840-6456. Alcoa Cladding Systems, Norcross, Ga. **CIRCLE 212**



PHOTOGRAPHY: © CHARLES

Triad of new metal wall panel and roof system offerings

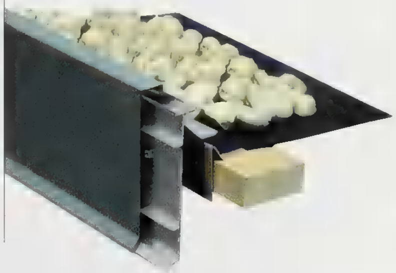
Tremco Incorporated has introduced new metal wall panels and standing-seam metal-roof systems that include the TremLock VP, TremLock LSP, and TremLock SL products.

TremLock VP, Tremco's standard design panel for new or retrofitted roof systems, is capable of spanning secondary structural members spaced up to 5' and can be applied to light-gauge-steel framing, plywood, and metal decks. TremLock LSP is designed for a minimum of ¼" slope and can be used in new construction over an open span or in a retrofit construction over structural framing. The last addition, TremLock SL, is a standing-seam metal-roof system for vertical and steep-sloped roofs.

All the TremLock metal roof systems are 24-gauge steel and available in a variety of standard architectural colors. 800/562-2728. Tremco Incorporated, Beachwood, Ohio. **CIRCLE 213**

Redesigned roof trims series

Perimeter Systems has redesigned the Press-Loc Series of architectural copings and snap-on gravel stops. The secure bar design of the gravel stop (below) works on a variety of roof membranes and allows for a leak-proof gravel-stop edge that is resistant to wind-uplift. The new coping features conceal spring-loaded compression cleats that allow the installer to easily snap the coping into position in a vertical fashion. 919/775-7353. Perimeter Systems, Sanford, N.C. **CIRCLE 214**



▲ Bolder vinyl siding

Heritage Hill vinyl siding features the weather-resistant Geloy material that makes it possible to produce vinyl siding in dark, bold colors without concerns about fading. In addition to being fade-resistant, Geloy does not have the propensity for heat distortion seen in some pure acrylic siding products. Available in traditional and dutch lap profiles, Heritage Hill is an ultra-low-gloss product that features a woodgrain emboss. 800/BUILD GP. Georgia-Pacific, Atlanta. **CIRCLE 215**

▲ Seven-inch solid-core siding

Crane developed CraneBoard7 as a new solid-core siding offering to match the 7" siding profile. CraneBoard7 has a seamless appearance and a ⅝" profile with no visible nail heads. Unlike fiber cement, CraneBoard7 is lightweight and impervious to moisture. The backing has an R-value of 4.0 and carries the Energy Star logo, the only siding that can make this claim, according to the manufacturer. 800/733-8469. Crane Performance Siding, Columbus, Ohio. **CIRCLE 218**

► Fluid membrane

ExoTite Waterproofing is a polymer-enhanced, single-component, fluid-applied asphalt-emulsion waterproofing membrane designed for vertical or horizontal commercial applications. Spray application allows for continuous coverage, even in areas with complex detailing. ExoTite can be applied to concrete, masonry, and other structural substrates. 888/903-KOCH. Koch Waterproofing Solutions, Reynoldsburg, Ohio. **CIRCLE 219**

▲ Reflective modified bitumen membrane saves energy

StressPly EUV Mineral is Garland's latest modified bitumen technology. The high-performance membrane (featuring a fiberglass/polyester reinforcement) has a mineral surface with a reflectivity rating that doubles the standard mineral used in the roofing industry today. This specially developed mineral significantly lowers ambient roof temperatures, resulting in energy savings Garland claims no other multi-ply, mineral-surfaced roof system can match. In addition, the system provides long-term UV weathering resistance while incorporating postconsumer recycled rubber from scrap tires. 800/321-9336. The Garland Company, Cleveland. **CIRCLE 216**

► Passed the test

Accelerated weather testing of Honeywell's Millennium membrane system concluded that the membrane portion submerged in water for 6,000 hours had the same low temperature flexibility exhibited by the membrane before testing. The system includes granular surface membranes, smooth membranes, base sheets, adhesives, and mastics. 800/221-6490. Honeywell Commercial Roofing Systems, Cary, N.C. **CIRCLE 217**

▲ Slate-look shingles

The Berkshire Collection, Owens Corning's newest residential roofing line, is intended to give homeowners the upscale look of slate with the durability and performance of an asphalt shingle. These dimensional premium laminate shingles offer a combination of seven colors found in natural slate and five designer colors. Backed by a limited lifetime warranty, Berkshire shingles feature resistance to algae and high winds. 800/GET-PINK. Owens Corning, Toledo. **CIRCLE 220**

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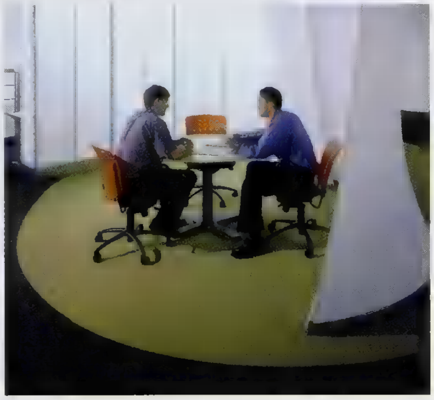
Product Briefs



► Carpet awards

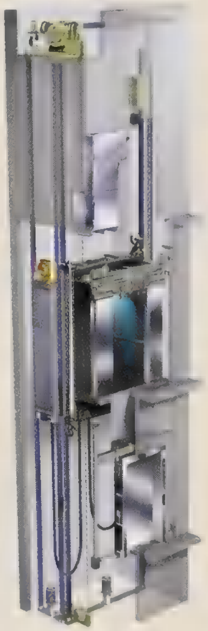
The Solutia Doc Awards competition, now in its 14th year, recognizes outstanding achievement in contract projects that include carpet made with Solutia Ultron nylon 6,6 fiber. The award was given to four firms, including Reza Moshiri, principal, and her project team at Wirt Design Group, Los Angeles, for the use of Shaw Contract's Visual Accents and Synthesis styles in the Homestore corporate headquarters facility in West Lake Village, California (shown). 866/858-7668. Solutia, St. Louis. **CIRCLE 221**

▲ Commercial faucets

Gerber commercial kitchen and lavatory faucets are vandal-resistant, feature ADA-compliant blade handles, and have smooth lines for easier cleaning. The bodies and spouts are built with heavy cast brass for a range of commercial kitchen and bathroom applications. 847/675-6570. Gerber Plumbing Fixtures, Lincolnwood, Ill. **CIRCLE 223**

► Textured copper

The Revere Liberty Collection features a selection of textures from Rigidized Metals Corporation that have been applied to Revere Classic Copper. The collection can be used to create a modern, high-tech, or rustic finish on walls, fascias, mansards, and any type of architectural accent. The lightweight and malleable texture allows for use in applications throughout the home, including kitchen counters and backsplashes, as well as fireplaces (shown). 800/448-1776. Revere Copper Products, Rome, N.Y. **CIRCLE 224**



Product of the Month
Schindler 400A Elevator

The Schindler 400A traction elevator system eliminates the need for a machine room and unsightly roof penetration. The system's compact machine can be mounted directly to the elevator rails—requiring less building construction interface and less lead time. The system uses advanced permanent magnet drives for a clean, oil-free operation, and it uses up to 40 percent less power than traditional drives. No oil also eliminates the potential for belowground leaks. In the elevator's underslung design, cables run diagonally beneath the cab for optimal balance and less side-to-side vibration. The unit is serviced from atop the cab, which is fitted with safety guardrails.

The 400A is suitable for two to 20 stops, features variable frequency drives, speeds of 200 and 350 fpm, and rises of up to 200 feet. It comes in 2,100 lb., 2,500 lb., 3,000 lb., and 3,500 lb. configurations. 973/397-6564. Schindler Elevator Corporation, Morristown, N.J. CIRCLE 222

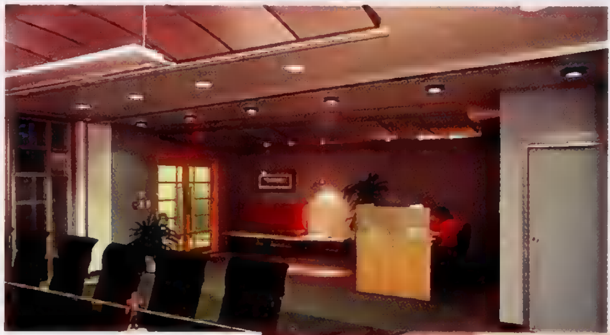
▲ Commercial-grade fiberboard panels

LP Specialty Products introduces a new line of commercial-grade Ultra High Density Fiberboard (UHDF) panels as an alternative to ceramic tile, metallic surfaces, and high-pressure laminates in light construction projects including hotels/motels, offices, and commercial laundry rooms. The panels are made from a newly developed UHDF and feature a hard acrylic polymer topcoat that makes the panels water-, stain-, scratch-, and mildew-resistant. They are available in eight different color/finish combinations. 800/866-4323. LP Specialty, Huntersville, N.C. **CIRCLE 225**

For more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertisers & Products info.

► New colors for the year

DuPont Corian has added six new colors to its palette, bringing the total offering to more than 110. The introductions include one graphic solid and five soft neutrals: Acorn, Blue Pebble, Delta Sand, Doeskin, and Willow (shown). Graphic Blue is a new addition to the design series in the "brights" subpalette. Corian can be used for applications throughout the home, including countertops, backsplashes, vanity tops, wall cladding, tub and shower surrounds, desktops, and windowsills. DuPont's Zodiaq quartz surfaces introduces four new colors to its palette, bringing that total offering to 25. The new colors are Autumn Light, Cappuccino, Cinnamon Spice, and Copper Sunset. 800/4-CORIAN. Dupont Surfaces, Wilmington, Del. **CIRCLE 226**



▲ Nearly trackless record

The Individual Panel Sliding System consists of discrete glass panels and frames available in wood or aluminum with a wide range of muntin, finish, and glazing options. Unlike other sliding wall systems, the Individual Panel Sliding System is supported from a hidden track above the panels. As a result, only a single narrow track is required for the floor; if weatherproofing is not a consideration, then trackless options are available. Panels can be stacked conveniently out of sight (top). The system is suitable for restaurants, stores, mall fronts, ski lodges, conference rooms, offices, and churches. 800/411-NANA. Nana Wall Systems, Mill Valley, Calif. **CIRCLE 227**

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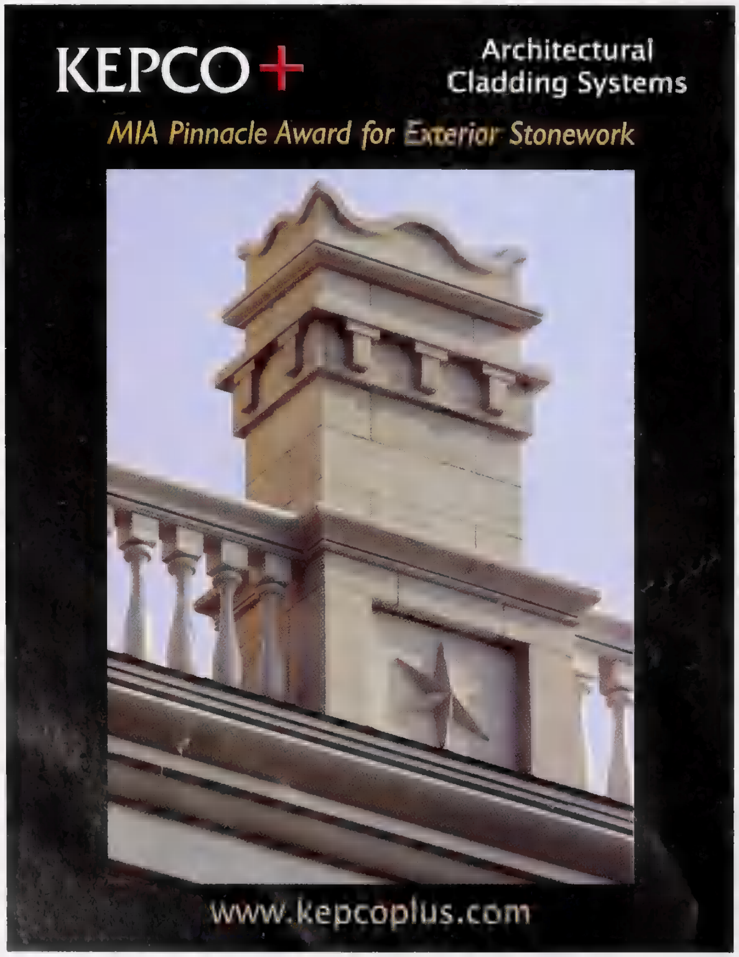

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▾ Movable files and walls

The C-Series Pedestal and Lateral files, from Trendway, feature integrated locks, heavy-gauge steel, full-extension slides with steel ball bearings, and adjustable glides. Designed for multiple applications, the C-Series Pedestal (below) can stand alone, be used under a work surface, or function as a mobile file. The Lateral files offer two- to five-tier shelving units that can be aligned side by side. Trendway has updated the literature for its movable wall product, Trendwall, in response to a resurgence of interest in the product. 616/399-3900. Trendway, Holland, Mich. **CIRCLE 228**

▴ Designer glass film

A line of 18 LLumar glass-enhancement films have been introduced as an alternative to glass etching. In addition to providing glass safety and UV-protection, the films now offer a wide range of colors, patterns, designs, and textures, including frosted white, opaque (shown), square and striped designs, and small and large dots. Many of the films can also be used on metal, painted, or other flat and cylindrical surfaces. 800/2-LLUMAR. CPFilms, Martinsville, Va. **CIRCLE 229**

► Melodious seating option

Lyric upholstered stackable guest seating can be used for public reception rooms, training classroom and lecture halls, office guest seating, and food service and general hospitality applications. The chair's seat and back are made of rigid, one-piece, high-impact, blow-molded plastic. Polyurethane-padded and upholstered options cover seat and back or seat only. 972/641-2860. Vecta, Grand Prairie, Tex. **CIRCLE 230**

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Product Briefs

▲ Soybean backing

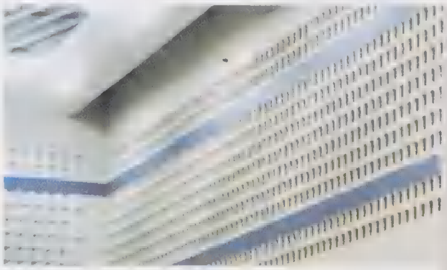
Pacificrest's BioBak system integrates BioBalance polymers into polyurethane commercial carpet backings. The special polymers, manufactured with a soybean-based polyol, provide an alternative chemistry for producing polyurethane carpet backings. In addition, up to 5 percent postindustrial content has been added to the carpet-backing composition. 800/522-8838. Pacificrest Mills, Irvine, Calif. **CIRCLE 231**

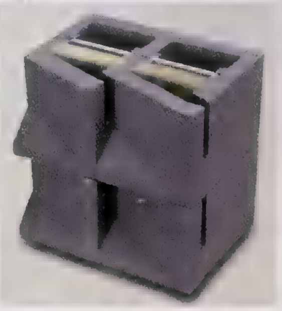
▼ Electric file system

The MediaStation ELF (electric lateral files) consists of a series of vertically arranged rotating carriers controlled by an electronic keypad or software. By taking advantage of unused overhead space, the ELF can hold the same number of files as traditional four-drawer filing cabinets or lateral files in 50 to 60 percent less space. The system works with FastPic Office records-management software. 800/639-5805. MegaStar Systems, Marietta, Ohio. **CIRCLE 232**

◄ Certified door line

Marshfield introduces two additions to their family of Environmental Class wood door products—the nonrated and 20-minute-rated particleboard core doors, certified by Scientific Certification Systems. The doors are suited for use in offices, schools, hospitals, government facilities, and other commercial applications where specifying green products is the goal. 800/869-3667. Marshfield DoorSystems, Marshfield, Wis. **CIRCLE 233**





▲ Sound off

Sound Cell sound-absorbing concrete masonry units utilize a skewed internal construction to focus and redirect reflected sound into a sound-absorbing cavity, resulting in lower noise levels. The unit provides multiple levels of noise relief at most frequencies and improves overall sound quality. The units are available in a variety of colors based on customers' needs. 800/445-0034. The Proudfoot Company, Monroe, Conn. **CIRCLE 234**

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All photos: DLR Group

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Easy to maintain Built to last, schools constructed with masonry require no painting, minimal maintenance, and can stand up to student wear and tear. The appearance that looks vibrant today will endure for years to come.

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For information, contact the Portland Cement Association.

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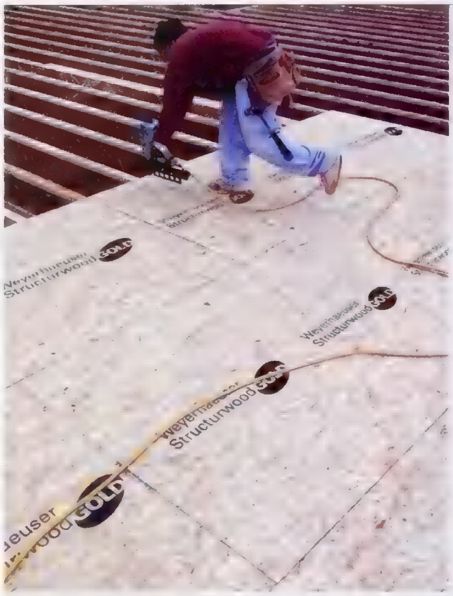
Product Briefs

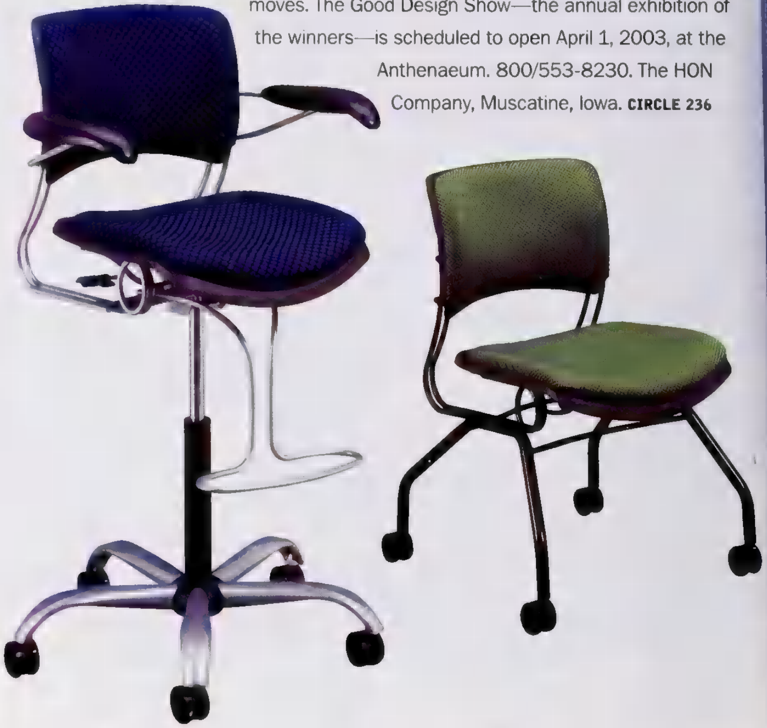


▲ Professional floor panels

Weyerhaeuser introduces Structurwood Gold professional-grade, single-layer flooring. Structurwood is manufactured flat and installed flat, therefore assuring a more stable floor system. Weyerhaeuser claims that its engineering protects against buckling, cupping, warping, sagging, veneer defects, and delamination, while eliminating weak spots, like core voids. The fully sanded panel is guaranteed not to need edge sanding due to water absorption. The product is produced primarily from wood species such as southern pine, aspen, yellow poplar, and other underutilized hardwoods. For more information on Structurwood, refer to this month's Product Literature section. 877/235-6873. Weyerhaeuser Company, Federal Way, Wash. **CIRCLE 235**

▼ Perpetual motion

HON's Perpetual Seating has been awarded a Good Design 2002 award from The Chicago Anthenaeum: Museum of Architecture and Design. Perpetual Seating features a frame design manufactured with solid steel wire that allows the seat and back to flex independently of each other, providing automatic adjustment as the individual moves. The Good Design Show—the annual exhibition of the winners—is scheduled to open April 1, 2003, at the Anthenaeum. 800/553-8230. The HON Company, Muscatine, Iowa. **CIRCLE 236**



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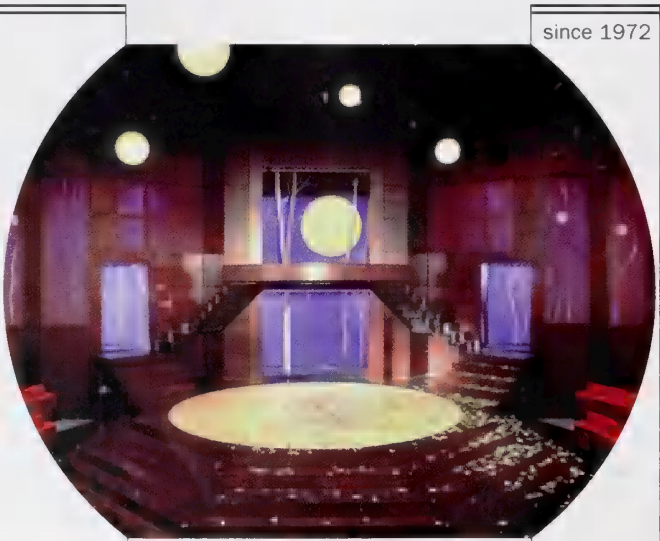

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Product Literature

Sink brochure/CD

Bates and Bates new *Product Pavilion* brochure showcases a collection of marble, metals, and new PVD finishes for the company's upscale kitchen and bath basins for homes, hotels, restaurants, and offices. The brochure comes complete with sink specifications and features utility baskets and sink grids. The company has also produced a multimedia CD that showcases its basins and pedestals crafted from ceramics, natural stone, and metal. The CD presentation also highlights the company's Weathered Collection, Stainless Steel Collection, Alegre Collection, and Problem Solvers Series. 562/808-2290. Bates and Bates, Paramount, Calif. **CIRCLE 241**

Wood office furnishings

CCN International offers a new comprehensive brochure for its Crofton Collection of handcrafted, fine wood office furniture, for management, reception, and conference-room applications. The large-scale photographs show a range of desks, conference and side tables, reception stations, storage credenzas, and display cabinets. 315/789-4000. CCN International, Geneva, N.Y. **CIRCLE 242**

Metal panels

A new 36-page catalog available from Petersen Aluminum describes the company's complete line of architectural metal for roofing, mansards, and fascia. The catalog illustrates the use of Pac-Clad material in a variety of applications and colors. 800/323-1960. Petersen Aluminum Corporation, Elk Grove Village, Ill. **CIRCLE 243**

Wood info CD

The Southern Pine Council, along with APA-The Engineered Wood Association and the American Institute of Timber Construction, has introduced an updated version of the *Wood Is Today* interactive CD. Designed for architecture, engineering, and building-construction students, as well as the education of practicing professionals and their customers, the CD contains 22 video clips and 132 PDF literature files. 504/443-4464. Southern Forest Products Association, Kenner, La. **CIRCLE 244**

Mold prevention

Camfil Farr has published an information bulletin on the role of air filtration in helping control the spread of mold through HVAC systems. 973/616-7300. Camfil Farr, Riverdale, N.J. **CIRCLE 245**

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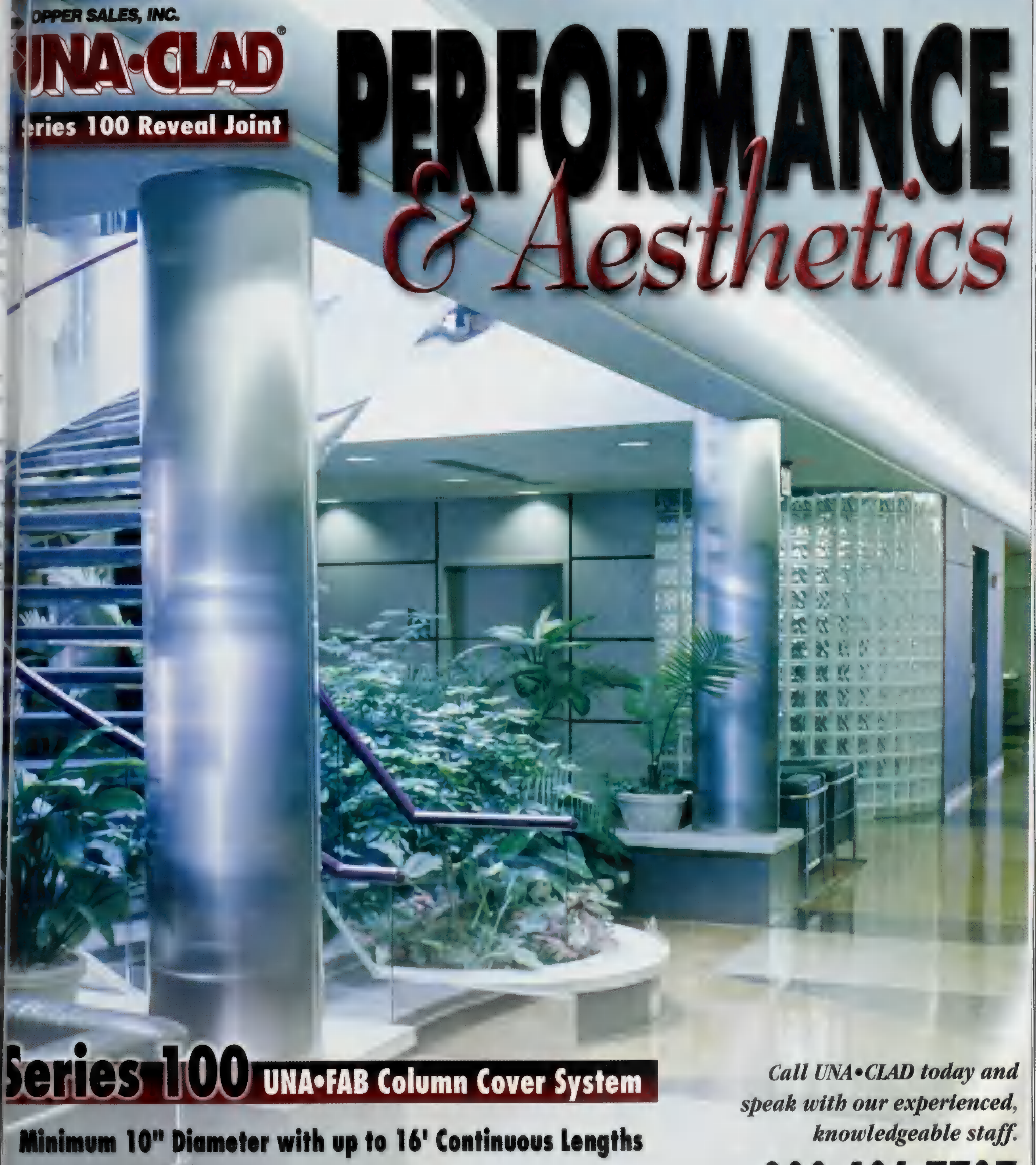

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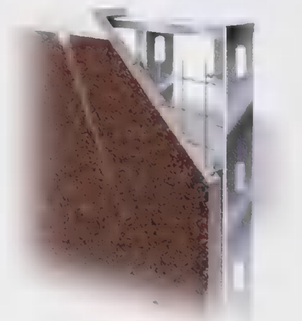

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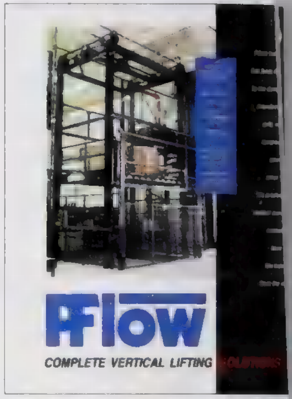

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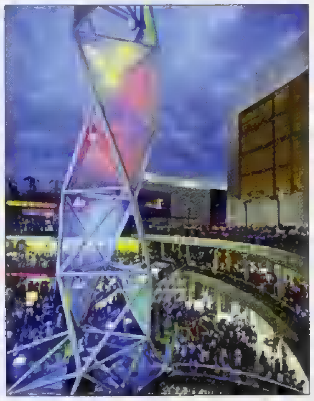

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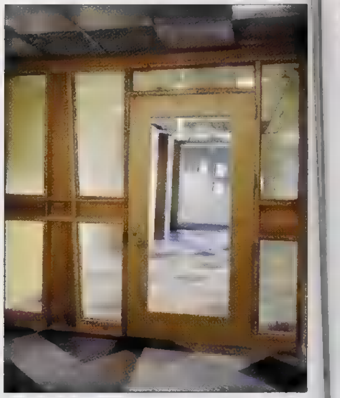
Hardwood Series



The new Hardwood Series provides an attractive alternative to traditional hollow metal steel frames. Listed and labeled by Warnock Hersey with 20 and 45 minute ratings, the Hardwood Series features an engineered core for dimensional stability and a thick hardwood face for unmatched beauty. The frames are available in a wide variety of wood species and come in complete packages for easy installation. www.fireglass.com 1-888-397-FIRE

Technical Glass Products

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Applications

The new flush exit device is designed for use on TOTAL DOORS in single, pairs and double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sightlines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.

Openings

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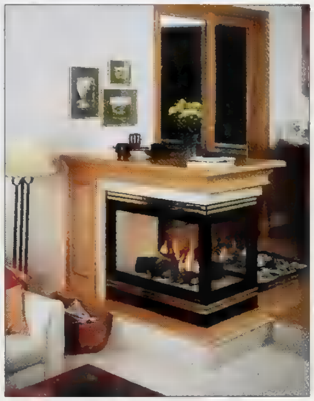
Three-Sided Fireplace for Unlimited Installations



Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.

Heat-N-Glo

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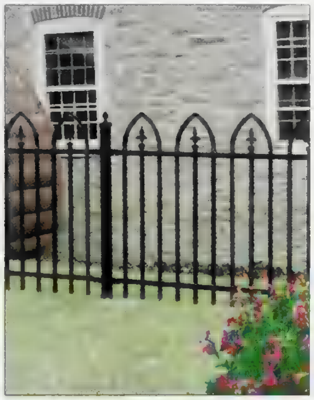
Ornamental Picket Fence with a Purpose



Monumental Iron Works™ is a modular system with the solid look & feel of authentic wrought iron. When assembled, it creates one of the strongest ornamental fence systems on the market. Welding processes are eliminated to avoid red rust problems. MIW utilizes a duplex coating of polyester resin over hot-dip galvanized steel for corrosion protection. Master-Halco, Baltimore, Maryland 21040. 410.676.2744 Email: spec@fenceonline.com Web site: www.fenceonline.com

Monumental Iron Works™

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Melton Classics columns, balustrades and mouldings are the standard for quality and design. Columns are offered in fiberglass, poly/marble composite, synthetic stone, cast stone, GFRC and wood. Balustrades are offered in synthetic stone, poly/marble, polyurethane and cast stone. Ask us about our full line of cast stone products, and polyurethane mouldings and details. 800-963-3060, meltonclassics.com

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Parallel Design Partnership Limited

"ellen's brackets," an anodized-aluminum shelving system designed by M Ali Tayar, provides an elegant alternative to existing bracket-and-track systems. Cantilevered brackets come in two sizes, for shelves 3/4 or 3/8" thick and 10" deep. Wall-mounted tracks permit 1 1/2" adjustment of wood, glass or plexiglass shelves. For more info phone Parallel Design Tel: 212-989-4959 Fax: 212-989-4977.

Parallel Design

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Beautiful oak millwork glazing is just one of the many options available for Panelfold Moduflex operable walls. Moduflex walls may be specified with a wide variety of surfacing materials. An interactive CD-ROM is available by Fax (305) 688-3501 or e-mail: sales@panelfold.com. See Sweet's and visit our website: www.panelfold.com.

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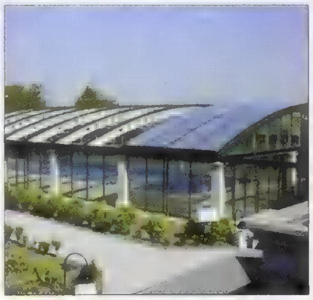
Retractable Roof Enclosures & Skylights



Custom designed retractable roof panels and operable skylights create year-round settings. At the touch of a button, motorized panels retract to open 50% of the roof area, letting in sunshine and fresh air. Maintenance-free thermally broken aluminum framing. Enclosures ideal for restaurants, patios, pools and atriums. For more information, call 800-267-4877, Email: openaire@openaire.com or visit www.openaire.com.

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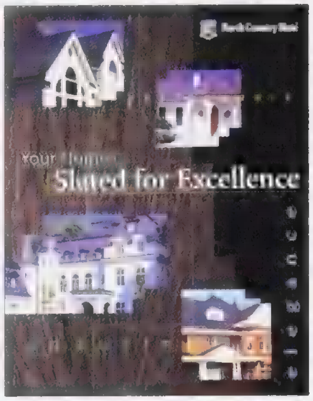
North Country Slate



North Country Slate offers a new brochure explaining the design and performance advantages of their remarkable roofing material to your residential customers. In six glossy pages, "Slated for Excellence" presents all the features and benefits to your client, the homeowner. Make sure you have this brochure on hand for your next discussion on slate roofing. For more information, call 800-975-2835, email us at info@ncslate.com or visit: www.northcountryslate.com.

North Country Slate

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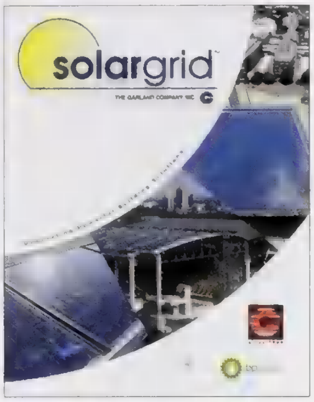
SolarGrid



Garland's SolarGrid, a modular Photovoltaic (PV) system offers building owners the opportunity to generate reliable, pollution-free power on their rooftops by converting sunlight directly into electricity. Garland's SolarGrid™ PV system provides the ultimate energy source for the 21st century by offering a fixed electricity rate and reducing the dependence on the aging utility infrastructure. The Garland Company, Inc. is ISO 9001 certified. 800-741-3157 www.garlandco.com

The Garland Company

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CertainTeed

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Gagecast™ is a cast metal wall surfacing material suitable for a variety of interior architectural applications where patterns that feature high luster, relief, durability, and cost effective installation are a requirement. Twenty-four designs are standard, however, custom collaboration is encouraged. Gagecast™ is one component of Gage Vertical Surfacing. Contact the factory for product literature and selected samples. 800.786.4243 www.gageverticalsurfacing.com

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InterEdge Technologies

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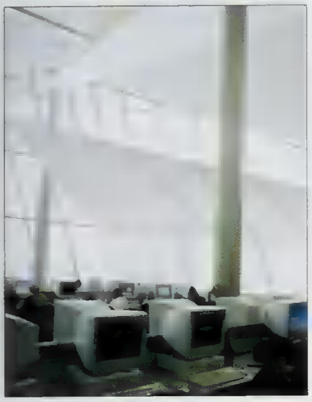

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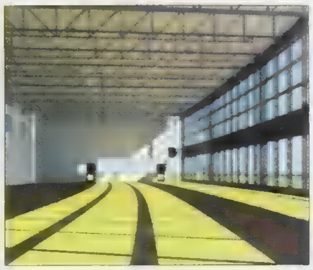
Closed Box, Too Much Glare, or..........



Nice design. But where there's clear glass, there's glare... even with tinted glass or dot frit. And glare in gyms doesn't work. You don't want to use plastic translucents in the upper half of that gym curtain wall. Even when it's new, plastic is still plastic. HVAC costs with that much curtain wall would be high, not to mention the localized hot/cold zones... and those kids in their shorts.

Advanced Glazings Ltd.

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Grand Manor Shangle®

CertainTeed's Grand Manor Shangle® is a super heavyweight shingle built on two full-size one-piece shingles with random 8" tabs applied on top. Patented shadow lines and a unique color palette give Grand Manor the look and depth of natural slate and wood. UL Class A. Lifetime limited, transferable warranty. Algae-resistant. UL Certified to meet ASTM D 3462.

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Ancor Granite

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Trespa North America

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HDI Railing Systems

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"Going Green," a special report examining the technology and procedures required to deliver architectural wood doors that comply with Forest Stewardship Council specifications for certified materials, is available from the marketing and communications group at VT Industries. 800/827-1615, ext. 210 or 304. VT Industries, Holstein, Iowa.

VT Industries

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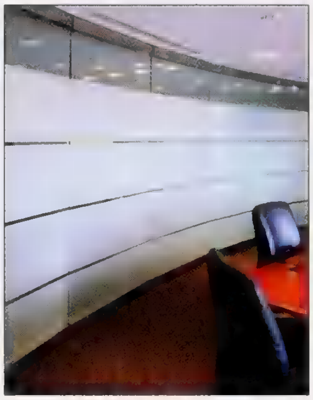

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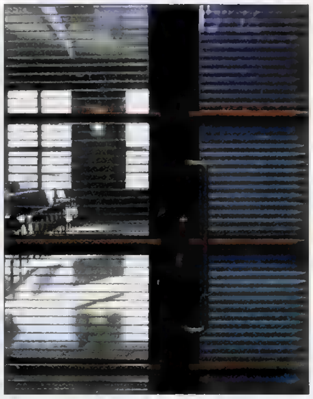

Dust-free and perfectly aligned, the Vision Control® cordless blinds are hermetically sealed between 2 layers of glass, custom-made. Designed to control energy and light transfer, its unique self-reversing blades eliminate every risk of mechanism breakage and offer total privacy when needed. Interior or exterior slope and vertical applications are all possible. www.visioncontrol.qc.ca

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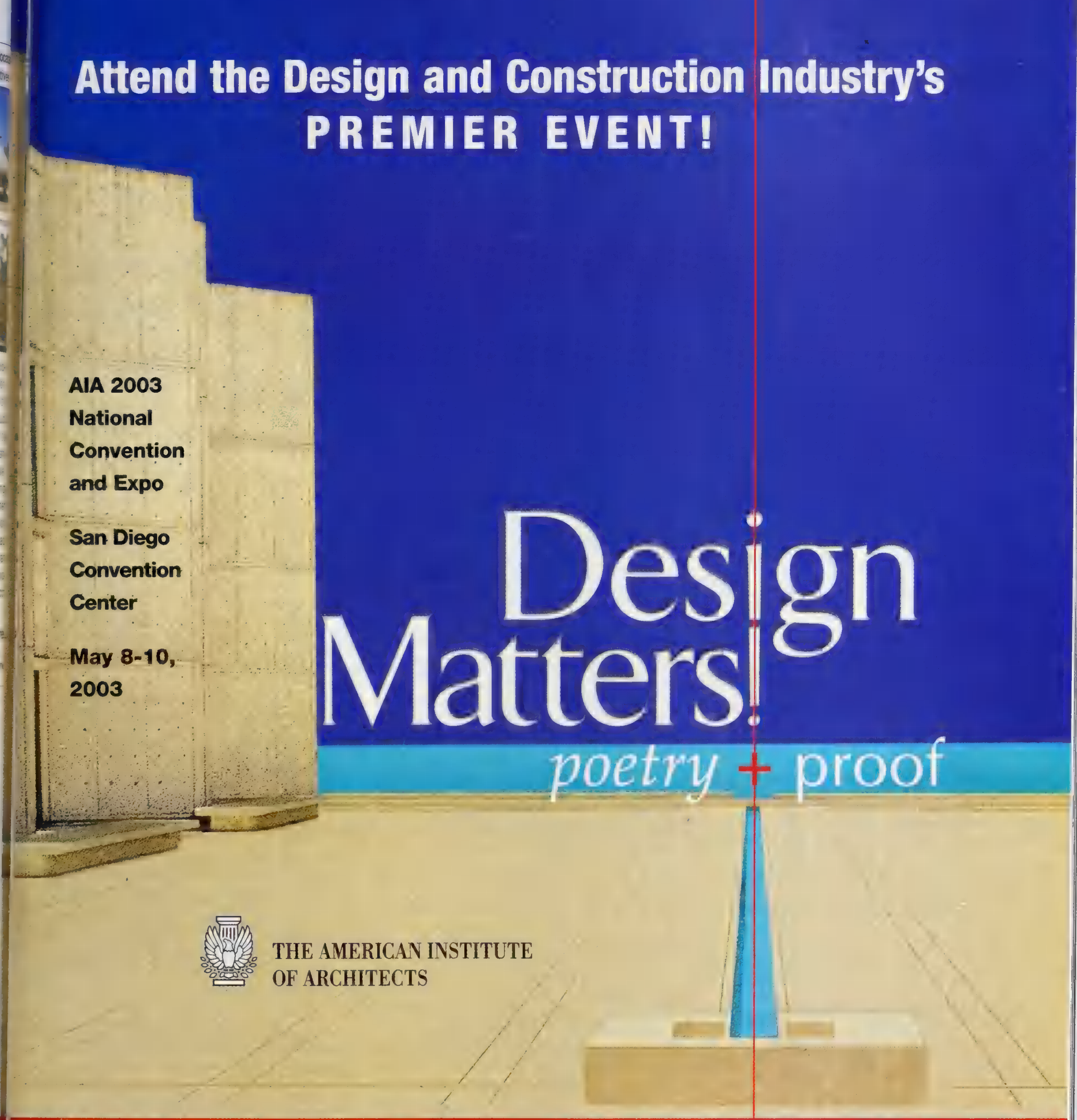

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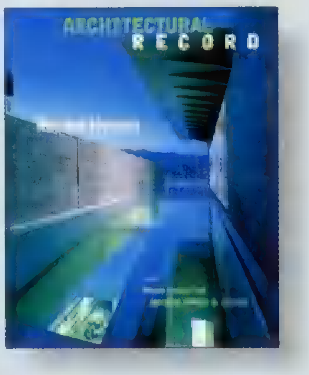

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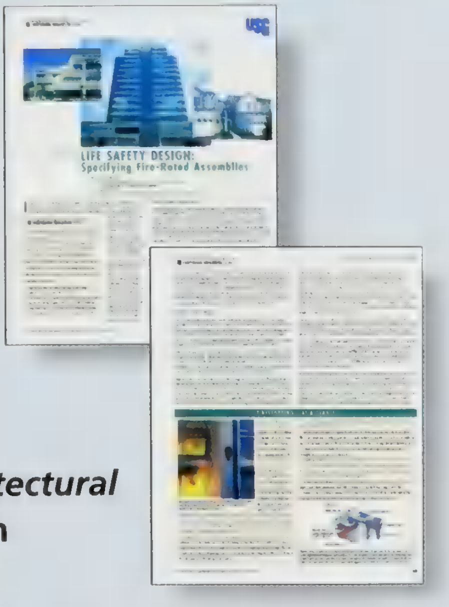

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Profile

Lee Bey: From architecture critic to Chicago's City Hall

Interviewed by John E. Czarnecki, Assoc. AIA

Although not trained as an architect, Lee Bey is one of the most influential people when it comes to Chicago's built environment. The City of Chicago's Mayoral Deputy Chief of Staff for Planning and Design since May 2001, Bey was the architecture critic for the Chicago Sun-Times *during the previous four years. A Chicago native, he has taken his knowledge of the city and architecture to City Hall, where he advises Mayor Richard M. Daley on architecture and urban-planning issues, such as downtown development, lakefront protection, parks construction, and architectural preservation. Bey is also the spokesperson for the mayor on issues that are contentious, such as the Soldier Field reconstruction, which the mayor supports.*

Q: *When working with Mayor Daley, who is known for having a strong interest in city building and making Chicago one of the "greenest" cities, how much influence do you have on his policy? Do you find yourselves always on the same page on issues?* I didn't study architecture and neither did the mayor, but we both approach it in a similar way. We're both natives who work to improve the city. There are times, as an adviser, when I am able to challenge a notion or say no.

The face of public housing is drastically changing in Chicago. Are you the mayor's voice at the table in discussions on public housing? Yes. And the mayor feels passionate about this. As the new housing developments get to a stage where they are about to be approved, the mayor's office weighs in heavily to make sure that the buildings are not just attractive but that they make sense in the neighborhood.

What has your role been with the redevelopment of Soldier Field? When I started in May 2001, construction hadn't begun yet and we were still pinning down final design points—things that the mayor wanted. My role originally was to see that those tweaks got in. From that point, my role expanded to become the mayor's person making sure that all of the processes are working and that all sides are talking to each other. My role is sort of enforcer some days, negotiator other days, and handholder other days.

What's the biggest difference between your prior role as critic and your current role working with the mayor? Compared to work with a newspaper, the stakes are higher here. My actions or inactions can reflect on the mayor. That was an adjustment that was tough for me to make. People assume that what I am saying are the mayor's words.

When you left the Sun-Times, *the newspaper did not replace you with a new architecture critic. Now Chicago has only one architecture critic, Blair Kamin [also* RECORD *contributing editor], at the* Chicago Tribune. *In your mind, how important is it for daily newspapers to have architecture critics?* I tried my darnedest to get the *Sun-Times* to hire someone else and, for whatever reason, it just didn't. It's a real loss. Blair and I were the only competing architecture critics in the United States. Architecture critics are extremely important, especially in these post-9/11 times. People care more about the built environment now, and the papers need to pick up on that and really seize the moment. The architecture critic can be an advocate and can explain the complex world of architecture to the layman. There has to be a place for criticism—to challenge why things are being built.

Photograph by Fred Baskin

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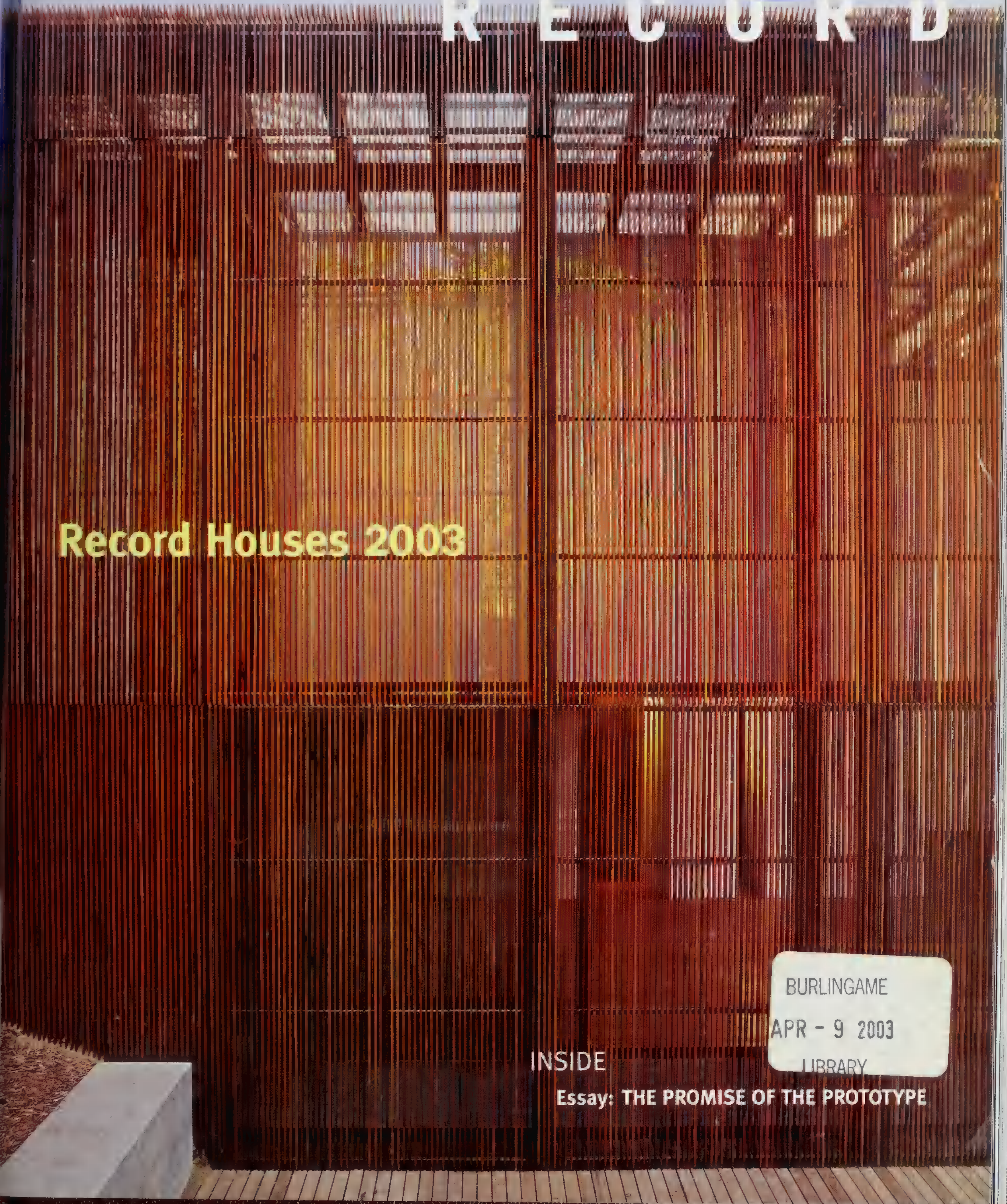

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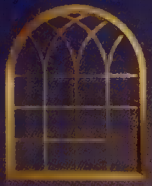

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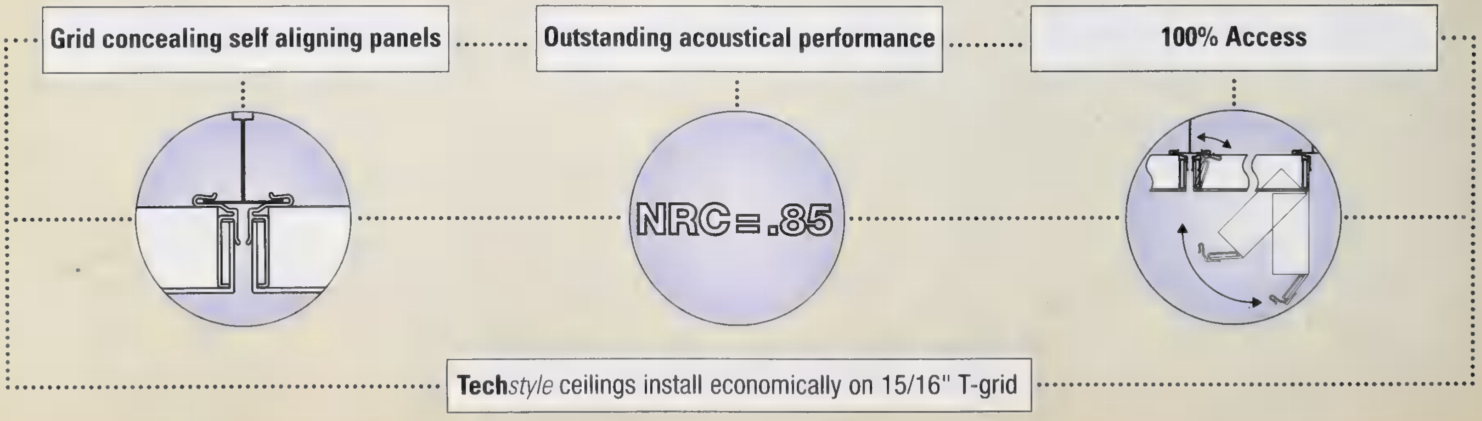
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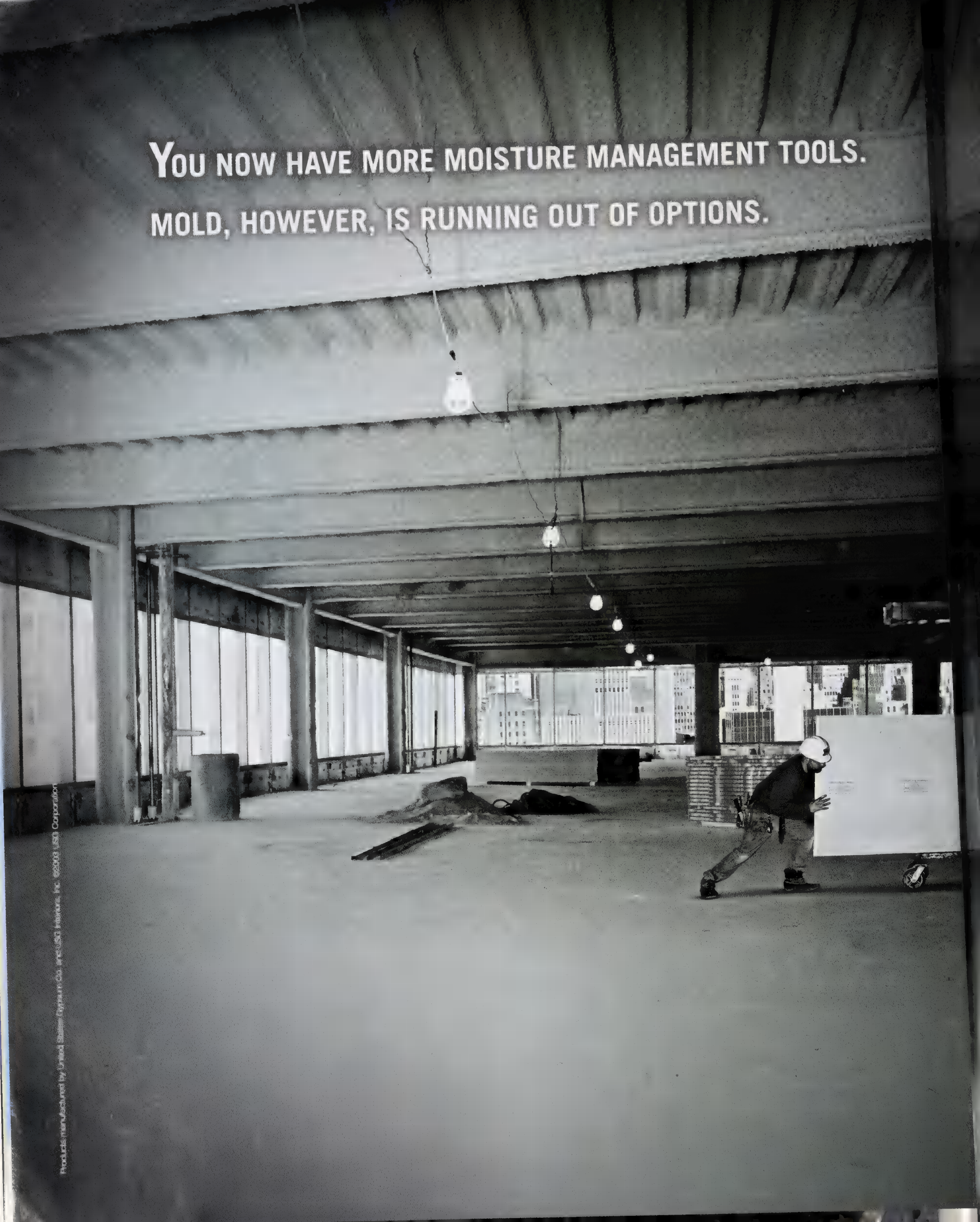
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On the Cover: *Sean Godsell's Peninsula House. Photograph by Earl Carter*
Right: *Red House, by Jarmund/Vigsnæs. Photograph by Nils Petter Dale*

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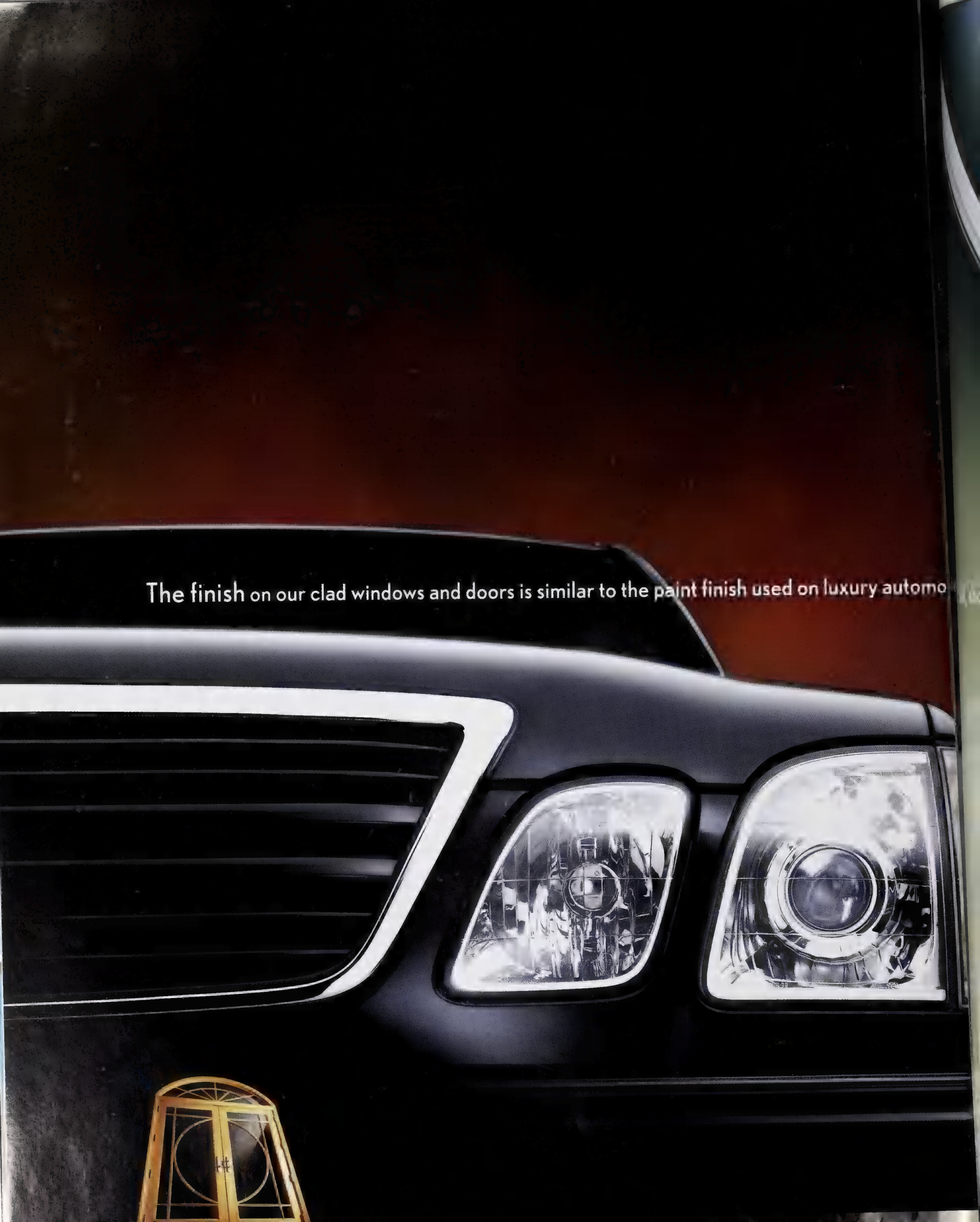

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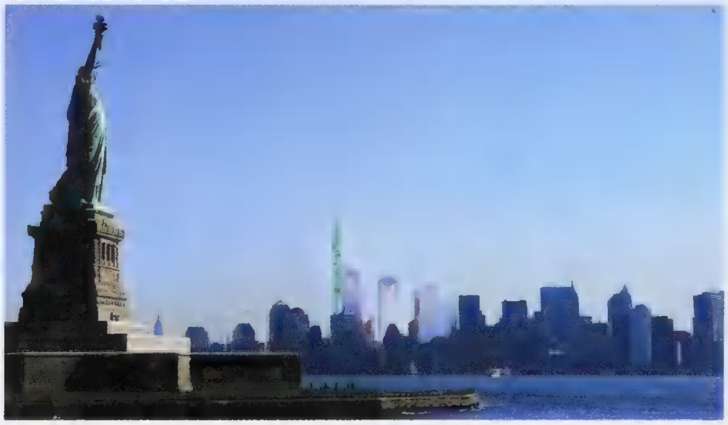
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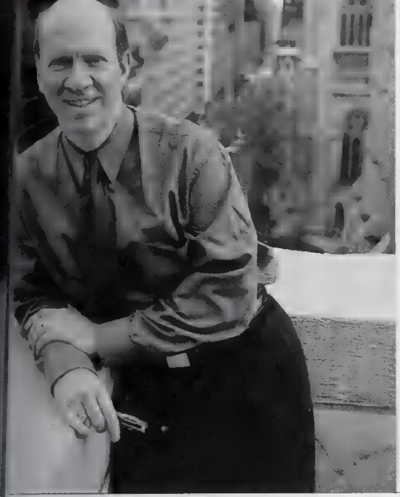

A new case

Editorial

By Robert Ivy, FAIA

ARCHITECTURAL RECORD loves the single-family house. For almost 50 years, since we published architect Ulrich Franzen's own home near Rye, New York, in 1956, this magazine has promoted Record Houses as laboratories for design. No other issue of the magazine is more popular with readers than this, serving up a platterful of innovative solutions to the modestly scaled freestanding building. Demonstration projects, these houses provide case studies, incorporating social ideals, formal concerns, and stylistic or material evolution into three-dimensional time capsules.

The temptation today might be to expand the franchise, commissioning a new generation of case-study houses, widening the explorations begun by John Entenza for Arts & Architecture magazine. As Thomas Mellins observes on page 112, who wouldn't wish to build another Eames house? Yet, as excellent as that groundbreaking program proved to be, the A&A case-study houses addressed a specific milieu: California in the years following 1945, where Modernist steel-framed structures were created for a burgeoning middle class in a paradisiacal, benign climate.

What, we wondered, is the case in 2003? To answer that question, ARCHITECTURAL RECORD convened a panel of housing experts last month, inviting a select group of architects and a demographer to lunch, where we discussed contemporary issues in houses and housing. You will be able read about the results of that luncheon in a subsequent article. The single-family house, the group declared, seemed to be well served, continuing to attract skillful work on custom homes for the educated or affluent and provoking attention to new processes, including prefabrication.

While ARCHITECTURAL RECORD will continue to report on advances in single-family residential design, the experts asked us to consider housing in the aggregate. What happens when we put houses together, exploring how the pieces fit together and how the individual modules cohere? The question of multifamily housing has never been more important. Achieving greater residential density, a problem vexing most architects, constitutes design's Holy Grail—decelerating the centrifugal force of sprawl and reducing our need for petroleum products.

Programmatically, the case for multifamily offers a variety of issues. Its vast potential clientele encompasses a range of house types and inhabitants, from ready-to-wear to blue chip. Solutions range beyond shape and array: economic, social, even legislative questions span across the demographic spectrum. Projects need not remain frozen in time, but can evolve, allowing the housing to expand or shrink with changing social demands.

At the same time, by soliciting and showing the best new examples of multifamily housing, we are describing a new urban framework. Think of a low-rise/high-density multiplication problem in which duplexes double to quads, to blocks, to neighborhoods in an iterative approach. The ideal stretches from the English New Town to today.

Throughout the coming months, ARCHITECTURAL RECORD will proceed to highlight examples of the best solutions for proximate living, scouring the newest additions of Amsterdam's Borneo Sporenberg and downtown San Diego. At the same time, we will formulate a new case study, to result in demonstration housing for the coming year: multiple, evolving, reflecting the new dynamics of society.

The new case raises questions. In the era of the megahouse and the S.U.V., can we find satisfaction in compression? Does the American ideal demand a fulsome plot of earth? Will we discover the next chapter to New Urbanism? What is the meaning of family? While we treasure our editorial legacy, and will expand on it, we ask if it is possible to expand the creative American ideal beyond the Record House. Join us on the case.

Robert Ivy

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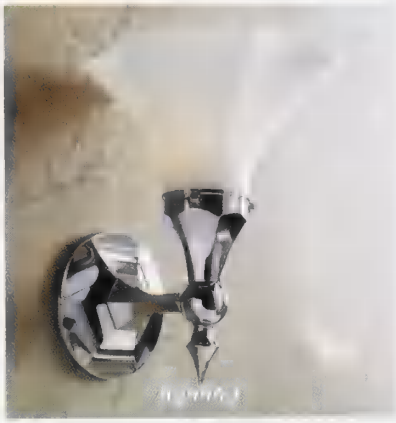

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Letters

Cow-town contemporary

I have just returned from America's Architectural Mecca, Fort Worth. I am in complete agreement with the words of David Dillon and his article on Tadao Ando's new Modern Art Museum of Fort Worth [March, page 98]. It is a gem, hard for me to put words to, to describe this quiet, meditative, handsome, and entirely appropriate setting for an art museum. The non-id-driven design has to be compared with so many of the new museums that are statements about the architects rather than museums for art. And how perfect that it is "partnered" with Kahn's Kimbell museum. Together, they stand as possibly the finest buildings created in the United States in the past 100 years.

Viewing these buildings reminds me of the highest aspirations I had as a young architect but never achieved.

A visit to these buildings should be a must, a pilgrimage, for practicing architects and students. Incidentally, the Fort Worth museum has published a small book by Michael Auping, titled *Seven Interviews with Tadao Ando*, which is a thoughtful, insightful, and exciting window into the man and his thoughts about architecture and the museum.

—Bob Goldfeder
San Diego

Cow-town copycat?

Tadao Ando blew it. RECORD couldn't have been more right than to say that the outside is never as important as the inside for Ando. This building reminds me of the Kennedy Center by Edward Durell Stone, right down to the the water feature.

—Joseph La Rocca
Charlotte

Too late for Urban Design?

In "Rebuilding Lower Manhattan" [February, page 46], James Russell noted that critics, led by *New York Times* critic Herbert Muschamp, have pitted the "progressive" architectural projects against "neo trad" urban concerns and states that the so-called progressives see "architecture as urban design." To date, there has been much discussion about the skyline and little about urban design. It seems as if most critics are uninterested or incapable of discussing what good urban space is and analyzing the proposals in relation to it. Robert Campbell's critique in that issue [page 75] stated, "What are the virtues of traditional urbanism that we should hang on to?" It is about time that these concerns come out.

In the February 6 *New York Times* article "Balancing Reason and Emotion in Twin Towers Void," Herbert Muschamp declared that until the Enlightenment, in the 18th century, there had been no secular urban space, only religious space. However, the Greek Agora and the Roman Forum were a balance of both, and from the Middle Ages on there were civic spaces and market spaces as well as religious spaces. The Campo in Siena, Piazza Signoria in Florence, Campidoglio in Rome, and the Louvre, Place des Voges, and Place Vendôme in Paris, as well as so many canonical urban spaces, were not religious. Until the late 20th century, urban space accommodated and symbolized *civitas*. To copy the style of the past is certainly reactionary, but to utilize the principles gleaned from the great precedent of urban space could be, as it so often has been, successfully progressive. "Instead," as Robert Campbell says, "both in program and in design, the architects and the LMDC are rehashing the late 20th century."

At a recent conference on Urban Design, organized by Columbia and Harvard Universities with the Van Alan Institute, in which I participated, there was a general sense that we have lost the art of urban design—that is, the making of urban space. A challenging question was raised to name any successful urban space that has been made since Rockefeller Center.

It is interesting that only the Peterson/Littenberg project presented a plan in their proposal. One of the critical means of visually rendering and comprehending urban design has been with the plan, or the urban map. The urban plan, like the architectural plan, often tells us a lot about the quality of the design, how a project relates to its context, what relation it has to the form of the city, and even suggests its role in the social patterns of the city.

It was interesting to see the hypergeometry of most of the projects in a site where the grid of Broadway and that generated from the Hudson River provide so much potential as context as well as geometry. Provided here are simple figure-ground diagrams of several of the projects. I believe these are very revealing for Robert Campbell's question, "What would be a good downtown neighborhood for our own time, now in the 21st century?" These plans were not revealed and not discussed. Rather, the images that first came out and are still being used show a fixation with tall, image-making buildings. To stand at the fine urban street intersection of 5th Avenue and 34th Street in New York City and not necessarily notice that on one corner is a tall building, the Empire State Building, is an important lesson. It's not about style, but rather an example of how to make tall buildings and simultaneously make [illegible]ace and place—a probl[illegible]s yet to be discussed [illegible]t it is not too late.

—Michael Schwarting
Director, Graduate Program in Urban and Regional Design.
New York Institute of Technology

Dramamine dreams

I was one of the AIA members fortunate enough to tour Lord Foster's new GLA building [February, page 110] last August. Whilst Brian Curtain and Foster and Partners are justifiably proud of the advancements in design, particularly their pioneering use of 3D technology, there are several flaws with the building that your reporter should have mentioned.

The public courtyard is very hard and completely lacking any landscaping or human scale. Unfortunately, the courtyard has been taken over by the teenage skateboarders who congregate downriver at the National Film Institute.

Arups' air-conditioning/ventilation engineering may be ingenious and energy-efficient, but it apparently does not work. On the upper floors, virtually every worker had a small portable fan on their desk.

Finally, I personally found the combination of ramped floors and ceilings, angled walls and differently angled columns very disconcerting.

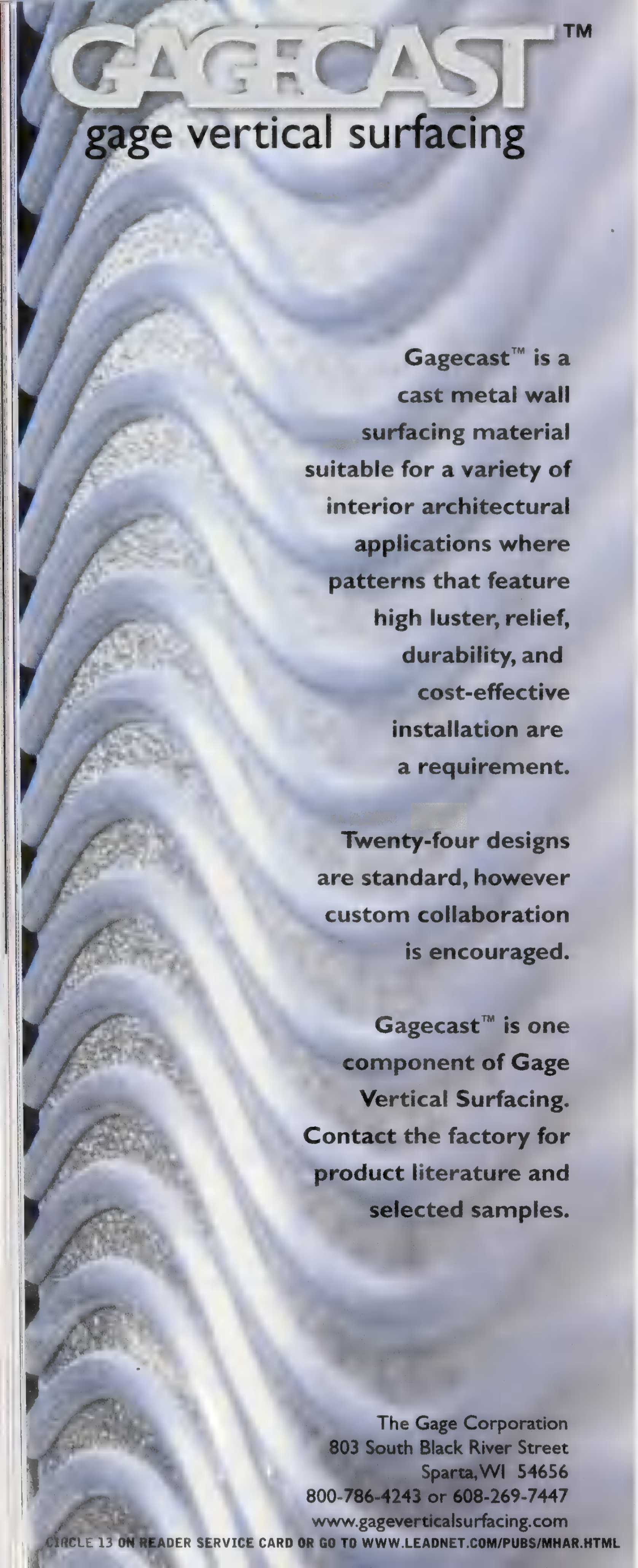
After an hour in the building, I felt a sort of seasickness, with a need to get some sort of reference back to the square and true. Strangely, I felt the same sort of relief upon exiting the building onto the embankment as I have when leaving a sailboat or an airplane.

Ken Livingstone and Foster and Partners deserve credit for bringing a very progressive new building to London. However, in my opinion, it must be judged a noble failure.

—Tom Giannini, AIA
London

Out with *de*[illegible] old

In his commentary on the Saxon



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Letters

State Library in Dresden by Ortner and Ortner [Building Types Study, February, page 152], David Cohn states that this building stands for a "suggestive image of a new Germany in the making." It can only be hoped his proposition will not come true, and my belief is it won't. While functionally sound, this library shows an institutional, oblique, even unfriendly face to the public and to its visitors. If this monolithic architecture were to be representative, it would suggest a retrogressive Old Germany, indeed. Fortunately, there is a wide variety of current work in Germany that points to the contrary. The open and inviting Landesbank by Behnisch and Partners in Hannover [February, page 124] is a much better example of things to come, as is the Max Planck Institute [January, page 110], located in Dresden not far from the Ortners' library. Behnisch designed a widely appreciated library for Eichstaett University some time ago, which has become a trademark for a friendly, youthful approach to that building type—and still stands for a progressive image of German architecture, as well.
—Oswald W. Grube
Herrsching, Germany

The eyes have it

In your December editorial ["Another Pair of Eyes," page 17] you wrote about *The New York Times*' coverage of architecture being left solely in the hands of Herbert Muschamp.

Muschamp's major failing is that he does not seem the least concerned about how buildings fit into their environment. It was very interesting, therefore, to turn the page and see an article about the proposed RISD building in Providence, by Rafael Moneo [News, page 23], who must be one of Muschamp's favorites. The article quotes Moneo as touting the building as being "so contextual," which is clearly absurd from the photograph. The proposal has been rightly derided by David Brussat, *The Providence Journal*'s urban design critic, as antithetical to the character of College Hill. Visible in both photos, however, is the Providence County Courthouse, a tour de force of contextual architecture, breaking up its huge mass into residential-size pieces marching up the hill. Not content with being a blight in the daytime, the proposed building promises to upstage the lighted steeples of College Hill at night, too. There might be a right place for this design, but this isn't it.
—Larry Cole
Silver Spring, Md.

Corrections

In the March issue, on page 190, the top image (for the Brazil Rendering System) of the Viking Research Center in Mississippi should have been credited to hypertecture and Richard Meier & Partners. Also in March, in the Building Types Study beginning on page 140, the school featured is P.S. 156, I.S. 392. For the March profile on page 252, the portrait should have been credited to Brad Baskin. In February News, on page 52, the photo of the Kate and Laurance Eustis Chapel should have been credited to Neil Alexander. Also on that page, the Federal Building and United States Courthouse in Central Islip, New York, was designed by Richard Meier & Partners and the Spector Group. Also in February News [page 54], the proposal by Wickham and Zawadzki, of In Situ Design, for the Pentagon Memorial should have stated that the victims' names are engraved collectively on the table surface, and the table is made of cast bronze. In our special March Healthcare Supplement, two photos of the Bronson Methodist Hospital on page 11 should have been credited to Peter Mauss/ESTO.

Send letters to editor in chief Robert Ivy at rivy@mcgraw-hill.com. Letters may be edited for style, format, or length.

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Record News

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Two Chicago exhibitions p. 48

REBUILDING LOWER MANHATTAN

Libeskind design chosen for WTC site, but process and time-frame questions remain

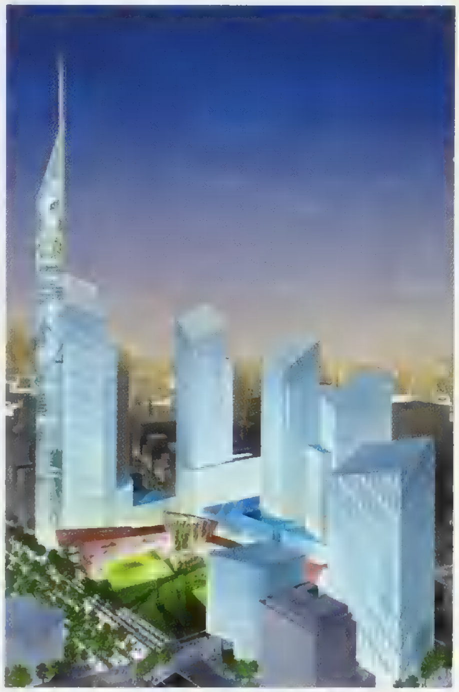
By John E. Czarnecki, Assoc. AIA, with Kevin Lerner

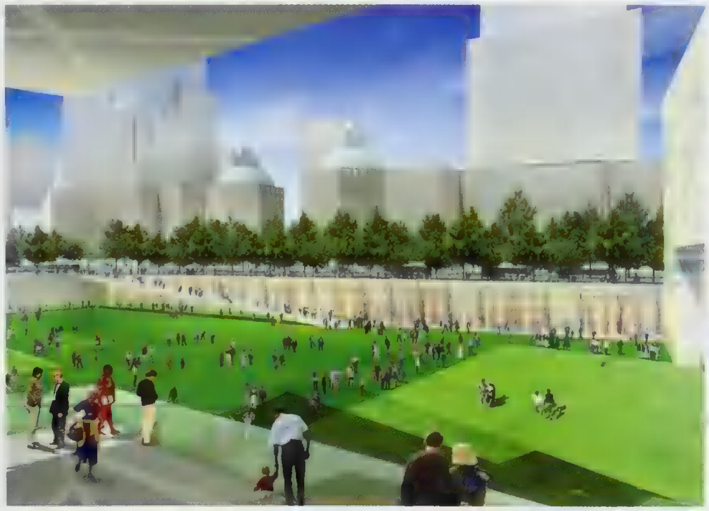
In one of the most widely publicized architect selections ever, the design by Daniel Libeskind was chosen on February 27 for the World Trade Center (WTC) site. The Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey selected the scheme by Studio Daniel Libeskind, with Gary Hack, Hargreaves Associates, and Jeff Zupan, but the rebuilding process and Libeskind's ongoing role remain unclear.

His face and his scheme graced the front pages of newspapers worldwide, but will the entire site be built according to Libeskind's design? Will the office buildings, transportation hub, or museum be designed by other architects based on Libeskind's master plan? And what's the time frame for any rebuilding?

The LMDC gave Libeskind a $180,000 contract extension in mid-March, which increases the total that Libeskind has earned thus far to $548,817. The contract extension allows Libeskind to do further modifications to the open area intended for a memorial. But what will his role be with the design of the transportation component, for example. *The New York Times* reported on March 12 that Michael Petralia, a spokesman for the Port Authority, said, "We haven't made any decisions yet. We would expect that Mr. Libeskind would be involved in some fashion in all the different aspects" of rebuilding. As of mid-March, it was also unclear if Larry Silverstein, the developer who holds the lease on the WTC office space, will continue as the leaseholder as the rebuilding proceeds or if he will bow to pressure and abandon his interests once the insurance claim is settled in court. And if Silverstein does intend to rebuild, will he have an option to select another architect(s) or an obligation to work with Libeskind?

The City of New York appeared to be jockeying to gain a greater role in WTC redevelopment decision-making. Daniel Doctoroff, deputy mayor for economic development and rebuilding, sent a proposal to Governor George Pataki that called for a new commission, with the governor as chair, to lead the rebuilding. With the new commission, the city would have greater responsibility for the WTC redevelopment than it currently has, and, like the Port Authority, would be exempt from the complicated review process. No action was taken on the city's proposal as of press time.





Daniel Libeskind withstood the media crush at the February 27 announcement (right), when he showed a modified design with a lawn on the sunken memorial area (above) and less-angular buildings (above right).

IMAGES: © ARCHIMATION (TOP AND LEFT); AP PHOTO/DEBELIO

Plans call for a competition to be announced soon for the design of a memorial for the site. The LMDC announced in March that the memorial will honor all victims as a single group rather than honor separate groups, such as firefighters, police, or tenants, individually.

Modified proposal

Libeskind made a few distinct modifications to his plan in February. The most striking change was that the memorial area was raised from 70 feet below ground level to 30 feet below grade with a green lawn underfoot rather than rock. The slurry wall is still visible on the western edge of the site. Libeskind says the memorial was raised to allow the slurry walls to be stabilized with lateral structure. While that may be true, it appeared that the memorial was also raised to allow for the possibility of a bus terminal or PATH train access underneath. A navelike space, as Libeskind called it—about 300 feet long and 30 feet wide—at the northwest corner of the memo-

REBUILDING LOWER MANHATTAN

OFF THE RECORD

Niall Kirkwood will succeed George Hargreaves as chair of the Department of Landscape Architecture at the Harvard Design School effective July 1.

Robert Fox Jr., AIA, has left New York firm Fox & Fowle Architects to start his own practice. The parting was "with mutual goodwill," according to the firm, which will keep its name. Daniel Kaplan, AIA, will join cofounder Bruce Fowle, FAIA, as senior principal.

San Francisco architect Stanley Saitowitz is designing the conversion of a factory into a new home for the University of Waterloo School of Architecture building in Cambridge, Ontario. The facility will open in May 2004.

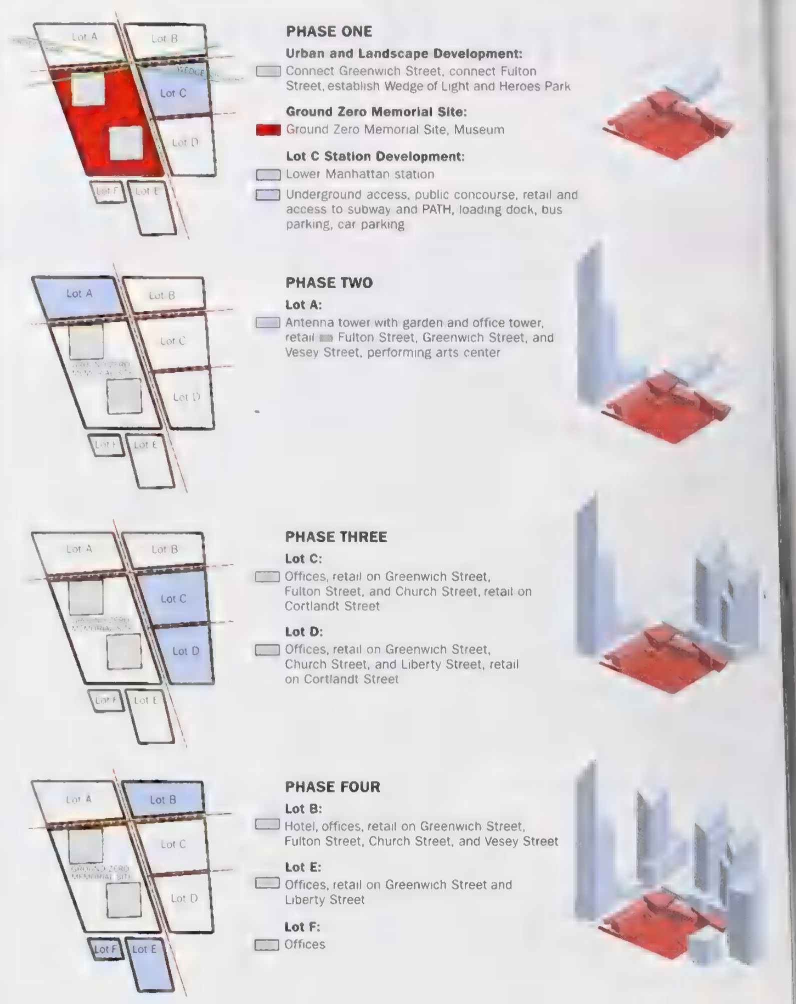
I.M. Pei, FAIA, will receive the Henry C. Turner Prize for Innovation in Construction Technology at the National Building Museum in Washington, D.C., on April 15. The prize is sponsored by the museum and Turner Construction Company.

French architect Jean Nouvel has designed a new branch of the Guggenheim Museum in Rio de Janeiro. Construction may begin this summer, with an opening in 2006.

Denver firm Fentress Bradburn Architects won a GSA Design Excellence competition to design a $50 million federal courthouse in Cape Girardeau, Missouri.

Shelley Poticha is resigning as executive director of the Congress for the New Urbanism effective July 1.

British architect Peter Smithson died March 3 at age 79. Smithson, a partner in practice with his wife, Alison, who died in 1993, was an influential British Modernist who designed the Economist Building in London.


Lot A
Lot B
Lot C
Lot D
Lot E
Lot F
PHASE ONE
Urban and Landscape Development:
▭ Connect Greenwich Street, connect Fulton Street, establish Wedge of Light and Heroes Park
Ground Zero Memorial Site:
🟥 Ground Zero Memorial Site, Museum
Lot C Station Development:
▭ Lower Manhattan station
▭ Underground access, public concourse, retail and access to subway and PATH, loading dock, bus parking, car parking
PHASE TWO
Lot A:
▭ Antenna tower with garden and office tower, retail on Fulton Street, Greenwich Street, and Vesey Street, performing arts center
PHASE THREE
Lot C:
▭ Offices, retail on Greenwich Street, Fulton Street, and Church Street, retail on Cortlandt Street
Lot D:
▭ Offices, retail on Greenwich Street, Church Street, and Liberty Street, retail on Cortlandt Street
PHASE FOUR
Lot B:
▭ Hotel, offices, retail on Greenwich Street, Fulton Street, Church Street, and Vesey Street
Lot E:
▭ Offices, retail on Greenwich Street and Liberty Street
Lot F:
▭ Offices

Libeskind proposes development in multiple phases, as shown in this illustration. The establishment of streets, a transit hub, and a memorial are in the first phase.

(continued from previous page)

rial area would be on bedrock.

His plan still called for the world's tallest building to reach 1,776 feet to the top of its spire. But the uses in the top of that building no longer included the "Gardens of the World," as he called it in December, but a more modest restaurant and other public space. The remainder of the office buildings have somewhat wider floor plates and are less angular than in the December iteration [RECORD, February 2003, page 34].

An inclined circular walkway that had been planned to connect the site to the World Financial Center across West Street has been eliminated. Instead, Libeskind presented two possibilities for what he referred to as West Street Park. One plan calls for a sunken West Street with a park above, and an alternate plan has West Street at grade level, surrounded by landscaping.

Libeskind emphasized the new intersection of Fulton and Greenwich Streets as a crossroads at the site. The four corners of the intersection would include the tallest tower, a performing arts center, entrance to the transit station, and a memorial museum.

Think's towers were 225 feet shorter and narrower in the final version.

Think revisions

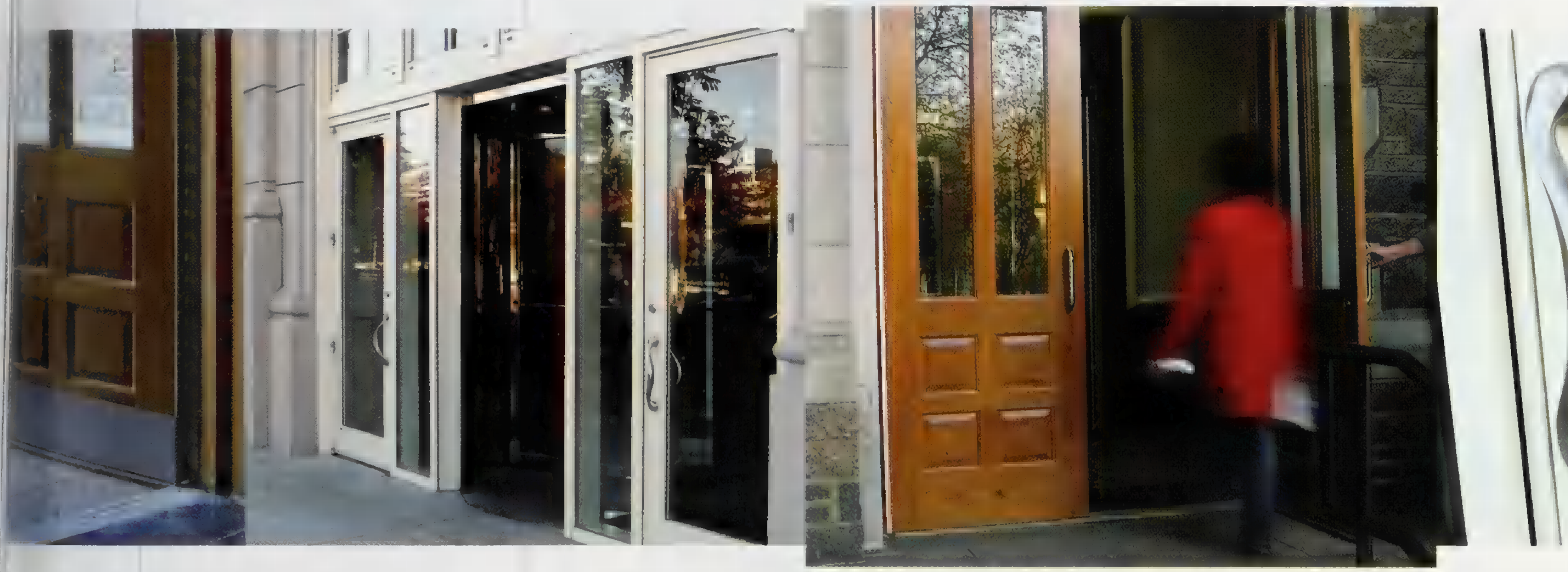
Although it was not selected, the design by the Think team, led by Rafael Viñoly, FAIA, Frederic Schwartz, AIA, Shigeru Ban, and landscape architect Ken Smith, was modified (pictured, left) in February. Think changed its latticework towers from 1,665-foot-tall structures of steel to 1,440-foot-tall towers, each with a smaller circumference and made of lighter-weight stainless steel. Schwartz told RECORD that the new version of the towers was designed to cost $300 million less than the previous one. Within the latticework towers, the museum component was moved down from about the 70th floor to the 35th floor. On the ground level in the latest version, much of the ground immediately around Think's latticework towers that was initially proposed as a reflecting pool became a park.

Weiss/Manfredi on board

New York firm Weiss/Manfredi Architects, retained in November 2002 as an in-house urban design consultant to the LMDC, received its assignment in March to develop plans for residential, commercial, and waterfront precincts near the WTC.

www For continuous updates on the planning of Lower Manhattan, visit our special section at **www.architecturalrecord.com.**

DANIEL LIBESKIND (TOP); THINK (BOTTOM)



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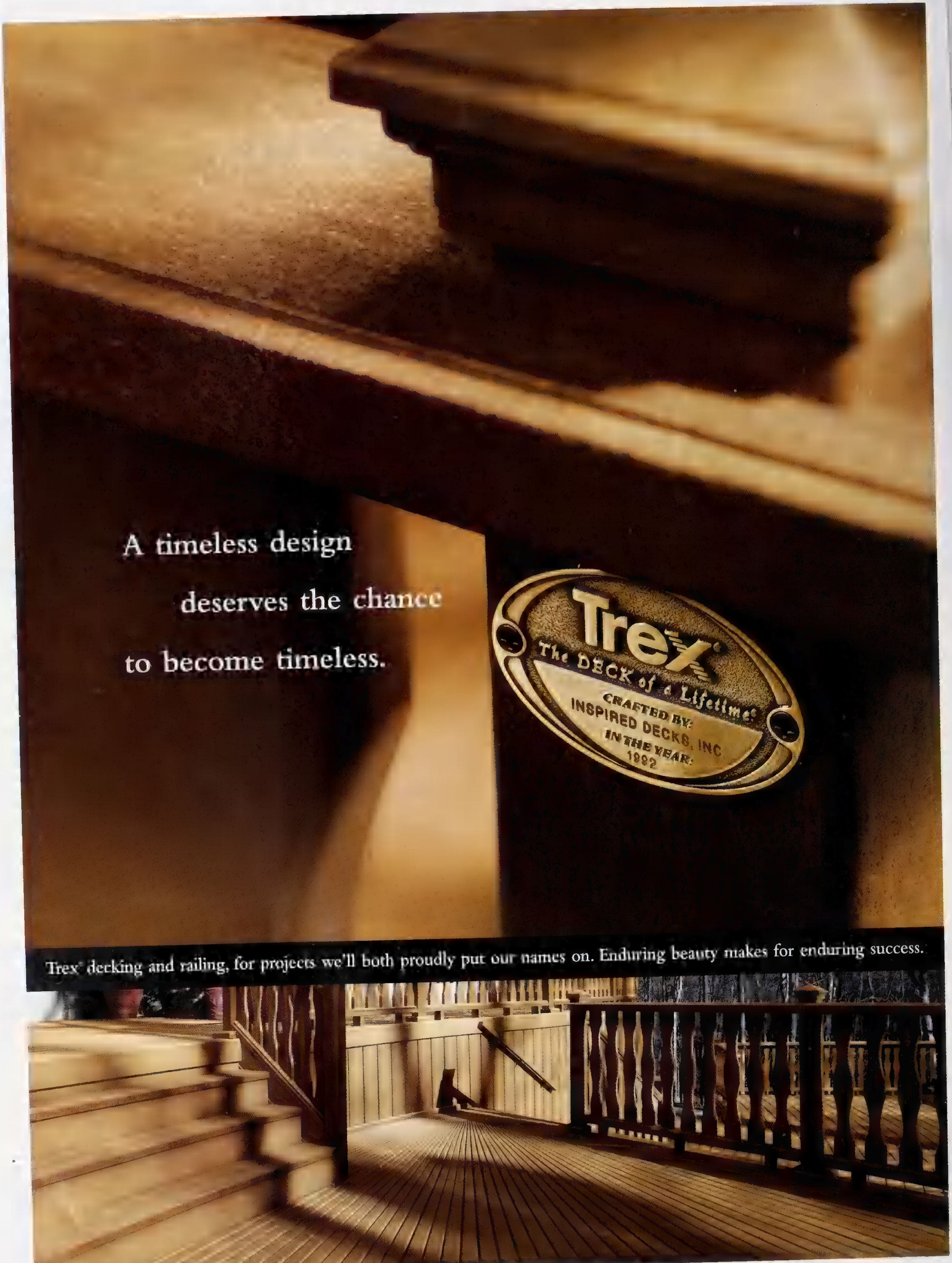

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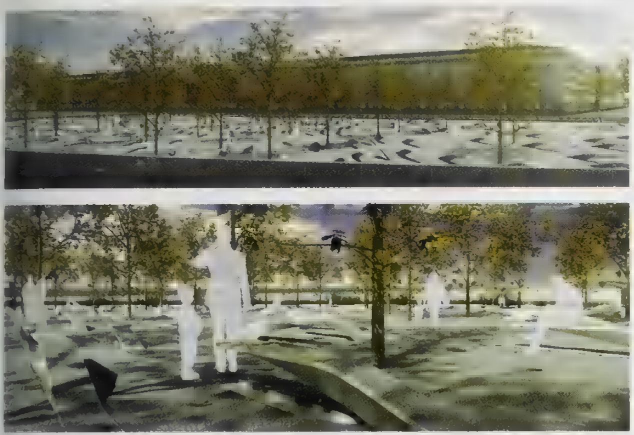

Set in a field of trees, the memorial has 184 benches cantilevered over pools of water lit from below.

Design by young New York architects selected for Pentagon's 9/11 memorial

A design by New York architects Julie Beckman and Keith Kaseman—their first major commission together and their first competition entry—has been selected as the memorial to the victims of the September 11 terrorist attack on the Pentagon. Beckman and Kaseman were chosen by the U.S. Department of Defense in late February from six competition finalists [RECORD, February 2003, page 52] among 1,126 competition submissions.

Beckman and Kaseman's design for the memorial, called *Light Benches*, includes a bench, or "memorial unit," for each of the 184 victims from the Pentagon and American Airlines Flight 77. The cast-aluminum benches will cantilever from gravel paving, and narrow pools of water, lit from below, will be under each unit.

Beckman and Kaseman created opportunities for individual and collective memorialization. A victim's name will be inscribed in each bench. The direction that each bench faces will indicate whether the victim was a passenger of the flight or a person in the Pentagon. The benches are also arranged according to the ages of the victims, and the memorial overall is positioned to follow flight 77's path.

Kaseman adds that the units' tactility, plus the crunching of gravel and placement of maple trees, activates multiples senses so that "this atmosphere really emphasizes life in general and has some kind of sublime beauty behind it."

The Department of Defense estimates that the memorial's construction cost will range between $4.9 and $7.4 million, which will be primarily raised in private contributions. Completion is scheduled for no later than September 11, 2004. *David Sokol*

Beckman and Kaseman "overwhelmingly honored" to be chosen

Infused with a sense of responsibility, Julie Beckman, 30, and Keith Kaseman, 31 (pictured here), said they were "overwhelmingly honored" to have won the competition to design a memorial to the September 11, 2001, victims at the Pentagon. A couple, who live together in a 275-square-foot New York City studio, Beckman and Kaseman met as graduate architecture students at Columbia University. Since graduating in 2001, they've completed a few small projects as Kaseman Beckman Amsterdam Studio while working for other firms.

ARCHITECTURAL RECORD: *What inspired you to enter this competition?*

KEITH KASEMAN: First and foremost, it was being in New York on September 11. Once we learned of the competition, we just felt a natural obligation to do something. All we wanted to do was contribute to the conversation.

AR: *What is the core idea for the benches?*

JULIE BECKMAN: This is a tribute to 184 unique individuals. We wanted to provide families, friends, and colleagues with a unique and special place to go to and feel good about themselves and the people they're remembering.

KK: We wanted a sense of place that is highly crafted and articulated—more than just a bench or a pool—with a layer of trees as well.

AR: *You both took a leave of absence from other jobs to develop this design. What are your plans for the immediate future?*

KK: The memorial is definitely our top priority.

JB: There are so many people depending on us to realize the memorial as it has been designed.

Interview by David Sokol

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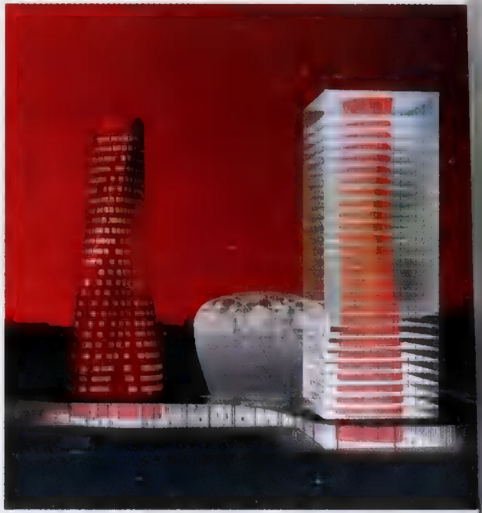
Toyo Ito unveils twists and curves for Barcelona project

Tokyo-based architect Toyo Ito has been chosen to oversee the expansion of Barcelona's Gran Vía Trade Fair Campus, located on the southwestern limits of the city and the neighboring municipality of L'Hospitalets.

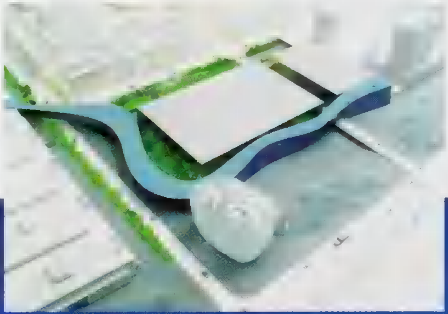
Ito will design representative buildings, including a meeting center, a vaulted entry hall, a serpentine circulation spine (below left), and a pair of landmark 28-story towers containing offices and a hotel. These buildings accompany 2.6 million square feet of exhibition space in six pavilions on the campus. Ito's project was chosen earlier this year in a competition with Dominique Perrault, Foster and Partners, Weil Arets of Holland, Madrid architects Abalos and Herreros, and Argentine architect Clorindo Testa.

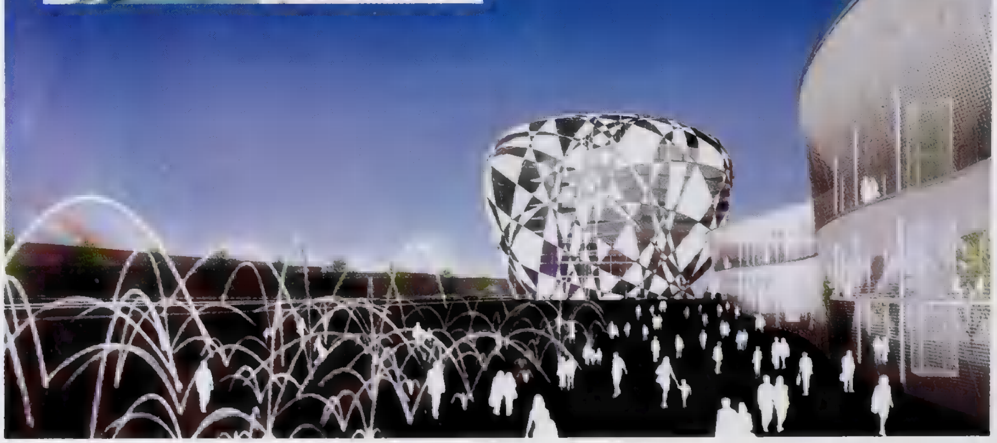
The design plays off the contrast between organic and orthogonal forms and uses moving water as both a theme and a major cooling element. "I wanted the expression of the entire complex to be about oscillation and fluidity," Ito says. The rippling, twisting shaft of the hotel tower, for example, is repeated in the central core of the glass-walled office tower, which will be visible at night, transforming it into a ghostly twin. The large rectangular hall of the meeting center contains the organically shaped volumes of two auditoriums. It opens to a sunken, water-covered plaza and a promenade of fountains along the southern facade. The multilevel circulation spine includes restaurants and other services. It winds through the exhibit pavilions like a river, with flowing water across its roofs that is visible through skylights.



Ito's design includes a pair of 28-story towers (above), a serpentine circulation spine (below left) and auditoriums opening onto a plaza (bottom).

Together with existing facilities at Montjuic about 1.5 miles to the east, the Trade Fair will be the second largest in Europe after Milan's. The new buildings are scheduled to open in 2007 at a cost of $500 million. Project financing is led by Catalonia's regional government. Other developments under construction or planned nearby include a 10-building office complex designed by Jean Nouvel, a hotel tower by Richard Rogers, a judicial complex by David Chipperfield, and an office park by Arata Isozaki and Foreign Office Architects' Alejandro Zaera. *David Cohn*





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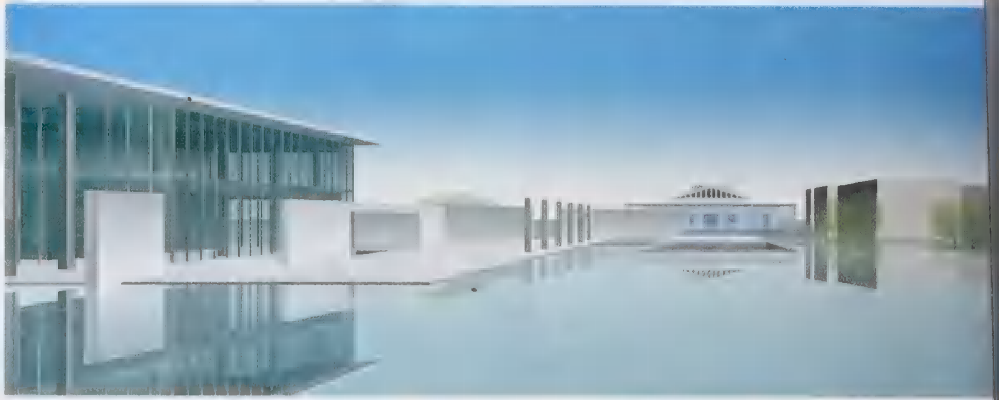
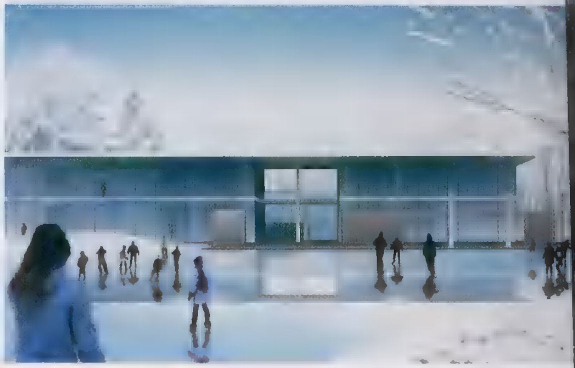


Ando designs centerpiece for Clark Art Institute

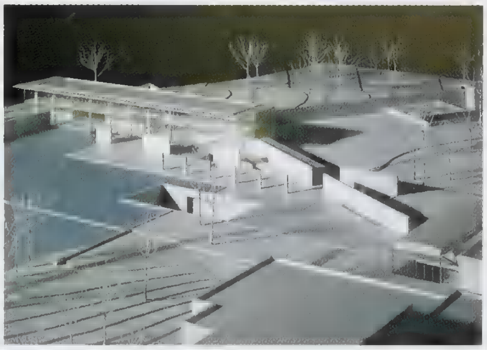
A new building designed by Tadao Ando will form the centerpiece of a major renovation of the Clark Art Institute, in Williamstown, Massachusetts.

The building will add 95,000 square feet of space to the institute without increasing the amount of above-ground floor space on the campus. More than three quarters of the new Ando building will be below ground, and an existing service building and parking lot will be demolished to make room for the new structure.



Ando's building (above and top, at left) will be adjacent to a reflecting pool (model, below) at the campus center.

The Ando building will be a two-story glass-and-red-granite structure with a terrace overlooking a new reflecting pool. Below-grade courtyards will allow light into the underground portions of the new building. The addition will house 11,500 square feet of gallery space, as well as a restaurant, café, and bookstore. It will also include office, classroom, and research facilities for the institute's graduate art history program. The red granite incorporated into the structure will match the cladding of an existing 1973 library and office building on Clark's campus.



Ando has also designed a new entrance pavilion for the institute's original 1955 building, a white marble Neoclassical structure. The 2,700-square-foot foyer will be clad in transparent glass and will restore a grand entrance to the building. The original entrance was closed when an addition was built in 1973.

Reed Hilderbrand Associates has designed a new landscape plan for the campus, focusing on the new reflecting pool at the center of the building cluster. Existing walking trails around the rest of the site will be preserved, and traffic will be rerouted through tree-lined drives to unobtrusive parking lots surrounded by trees.

The Clark Institute opened in 1955 and now holds a collection of more than 8,000 objects, with concentrations in Old Master, Impressionist, and 19th-century American art. In addition to being a public art museum, the institute conducts research in art history and criticism and offers a master's degree in conjunction with nearby Williams College.

The institute is currently fund-raising for the project. A time frame for construction has not been established. An exhibition of Ando's work is currently on view at the institute through April 27. An exhibition of Ando's design for the institute itself, *Art in Nature: The Clark Art Institute Today and Tomorrow*, is on view now through summer. That show includes models and drawings of the new designs, including a campus model. *Kevin Lerner*

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Gianfranco Frattini
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Gregotti Associati
Hans Kollhoff
Yoshimi Kono
Leon Krier
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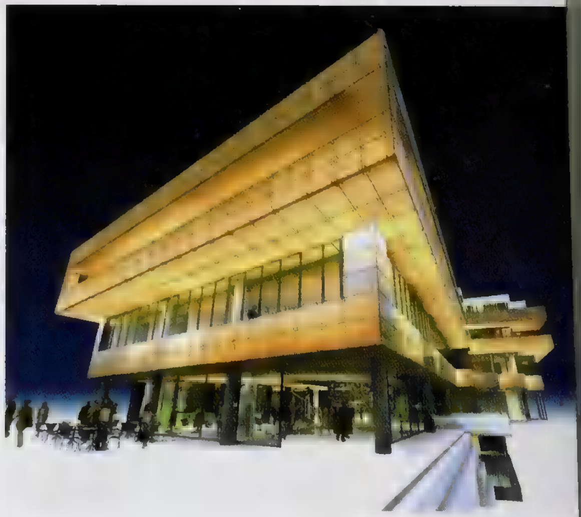
Swedes to make modern statement with embassy on Potomac



The Swedish Embassy (above and section, below) will be cantilevered and clad in glass and concrete.

Sweden is planning to build the first embassy ever to grace the historic Potomac River in Washington, D.C.

If the "House of Sweden" gains approval from the U.S. Commission of Fine Arts (CFA) on April 17, construction should begin next year. The U.S. Department of State and a local city advisory group have already given their informal approval for the combination embassy and condominiums at the edge of Georgetown near the Kennedy Center.

Sweden's trademark blond wood and winter-white stone will clad many interior surfaces of the angular concrete-and-glass embassy, according to the Swedish firm Wingårdh Architects, which designed the building.

Wingårdh won the commission, which is part of a commercial American venture, in a juried competition in January. The firm also designed the Swedish embassy in Berlin in 1999.

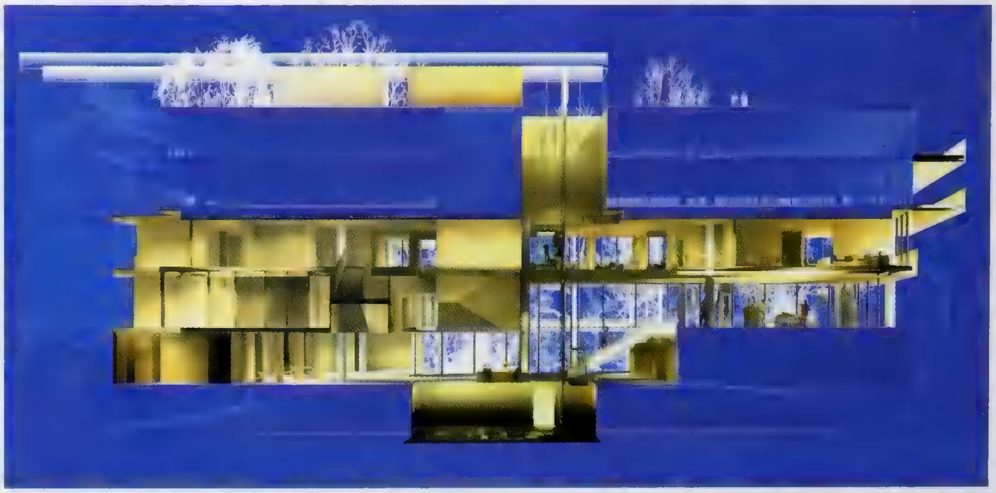
In addition to displaying Sweden's hallmark simple elegance, a chief goal for the new embassy "was to make it as accessible as possible," said codesigner Tomas Hansen. Layers of transparent and opaque glass will make the building appear open.

Because the embassy borders the river and the National Park Service's Rock Creek Park, retaining public waterfront access while trying to prevent flooding will be a challenge. Steel floodgates will help protect the 70,000-square-foot building. Most of Washington's Potomac shoreline has been reserved as riverfront park. No building has been erected directly on the riverfront since the 1980s.

The embassy itself will occupy the basement through the second floor of the four-story building. Parking will be in the subbasement, and a conference center and 100-seat auditorium will be in the basement. The transparent first floor will feature public exhibition space, and the second floor is dedicated to embassy offices. A rooftop garden will be shared with residents in condominiums on the top two floors.

American developer Lano-Armada Harbourside will sell the condos. Although Sweden is designing the building, it will actually be renting the space from the developer.

Sweden is now leasing embassy space in an office building five blocks from the White House. Most countries have built their embassies along one of Washington's two main embassy rows.
Barbara J. Saffir



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Freed's design for Air Force Memorial near Pentagon is approved

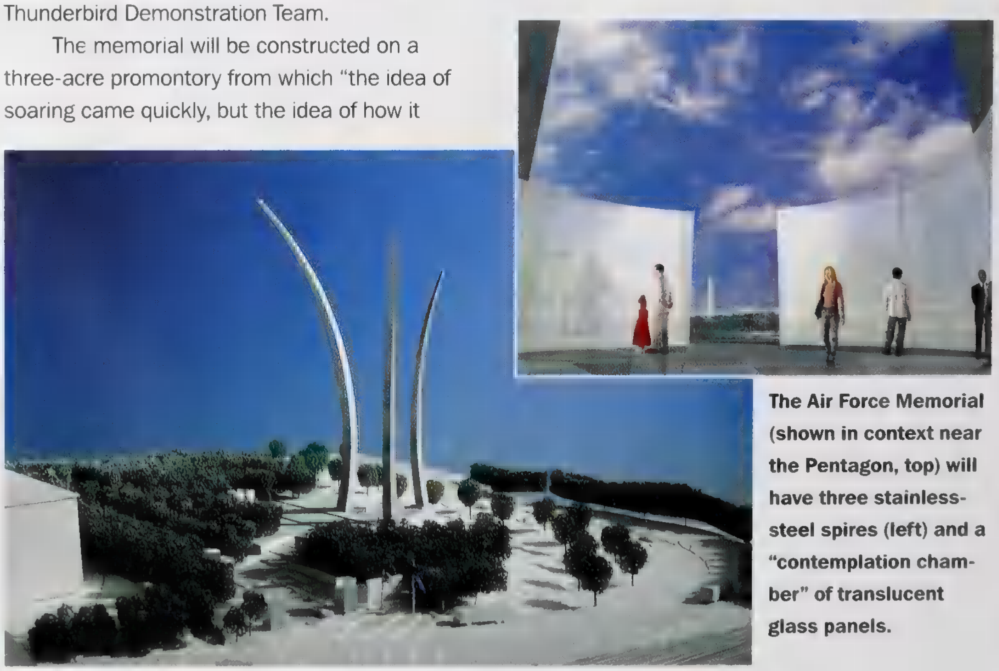
Shortly after its unveiling in mid-March, the National Capital Planning Commission approved the design by James Ingo Freed, FAIA, for a new Air Force Memorial in Arlington, Virginia. Freed, of Pei Cobb Freed & Partners, was chosen from an invited competition that included Morphosis, Urban Instruments, Moore Ruble Yudell, and student and faculty submissions from the Washington-Alexandria Center.

The centerpiece of the Air Force Memorial comprises three attenuated, arcing stainless-steel spires; the tallest of the spires stands 270 feet high. Freed explains that the spires' asymmetrical configuration creates a "constant dynamic relationship that's always changing," and evokes the image of flight. Observers have noted that the triumvirate resembles the peel-away maneuver performed by the Air Force Thunderbird Demonstration Team.

The memorial will be constructed on a three-acre promontory from which "the idea of soaring came quickly, but the idea of how it should soar was a long, drawn-out development." The design's verticality will form a counterpoint to the memorial to the victims of the September 1 attack on the Pentagon (see page 37 which the promontory immediately overlooks.

Other elements of the Air Force Memorial include a bronze Honor Guard by sculptor Zenos Frudakis as well as a roofless "contemplation chamber" of translucent glass panels.

This is not Freed's first design for a memorial for the Air Force, which has been the only military branch without a memorial in the Washington D.C., area. Established in 1992, the Air Force Memorial Foundation had commissioned Freed to design a memorial for a site along Arlington Ridge, between the Marine Corps' Iwo Jima Memorial and the Netherlands Carillon about a mile and a half from the current site. That 1995 design featured a five-pointed star suspended above the ground, the corners of which were extruded to form pilotis for the structure. In 1997, the Marine Corps filed suit to block the neighboring Air Force memorial because of its close proximity. The lawsuit was dropped, and the Air Force selected its current site in late 2001. To create the site, the easternmost wing of the Navy Annex will be demolished by 2004. The Air Force Memorial Foundation has raised $33 million of the $38 million estimated construction cost. Completion is scheduled for 2006. *D.S.*



The Air Force Memorial (shown in context near the Pentagon, top) will have three stainless-steel spires (left) and a "contemplation chamber" of translucent glass panels.

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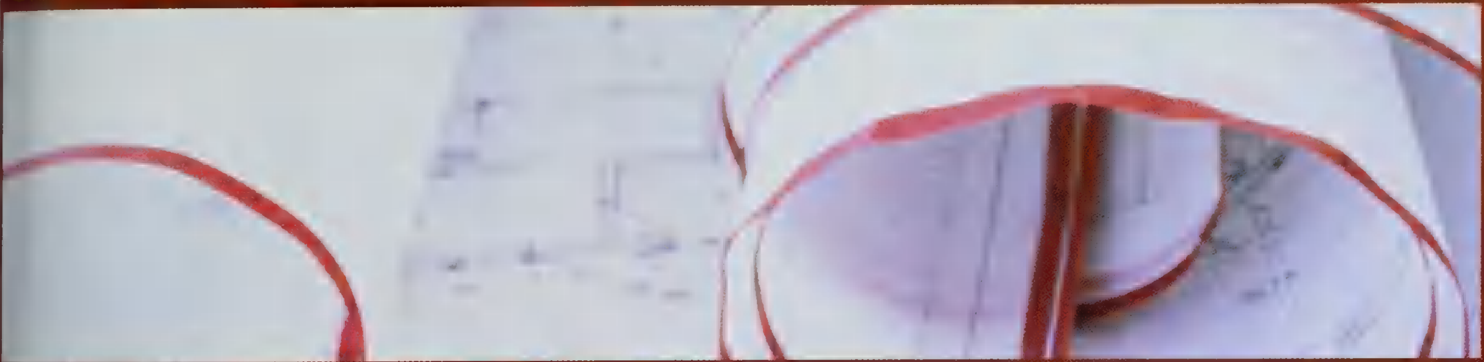

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Safe rooms: Steel cubicles as safe havens for terrorist attacks

With the continued threat of domestic terrorism, Jeff Quante believes he has a solution to keeping your homeland secure.

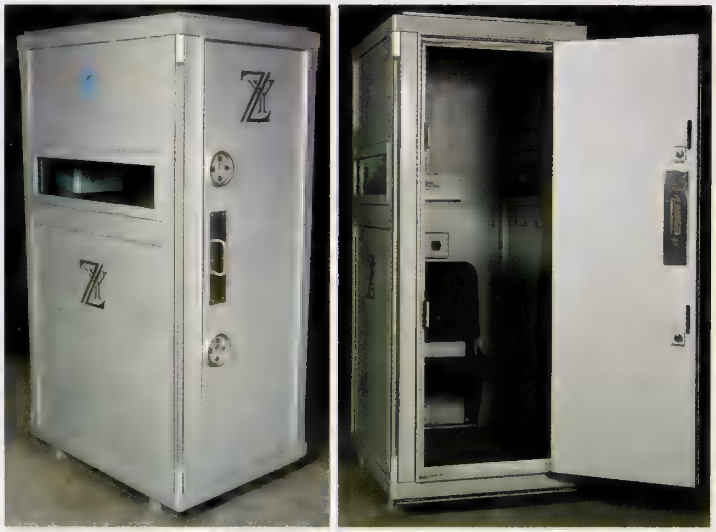
Amid the French tablecloths and hot tubs at last month's Washington, D.C., Home and Garden Show, Quante was hawking one of Zytech Engineering's steel "safe rooms." The contraption, with high-security locks and bullet-resistant glass, looks like an armor-plated phone booth with gun-turret-shaped windows.

Designed chiefly to resist bullets and forced entry, Quante said the steel vaults can also ward off terrorist attacks from "known" chemical and biological agents when equipped with an optional air-filtration system, which costs about $3,000. The units themselves start at about $16,000 and go up to more than $80,000. They range from phone-booth size—34 inches by 34 inches by 82 inches high and weighing 2,600 pounds—to 8 feet by 10 feet by 8 feet. Custom sizes can al be ordered.

Wealthy individuals and security companies have been the chief customers of the (self-described) "fear-driven" firm that Quante, a security designer for two decades, cofounded eight months ago. But now he's aiming to hook "middle-income Americans" into buying the freestanding refuges for their homes. He seized on the safe-room idea when a Virginia security firm asked him to build one and he couldn't locate a manufacturer.

Only eight rooms have been produced so far at Dunn Industries, a storage tank manufacturer in North East, Maryland. Quante hopes to sell 300 this year.

Sometime in the near future, Quante and his partner, glass specialist Nelson Bolton, plan to subject the safe rooms to bomb testing. Quante said a Maryland testing lab already has certified that the structures will withstand bullets and battering rams. "These rooms will last forever," says Quante, who expects to equip his own semirural home with one of the rooms. *B.J.S.*



The safe rooms can protect against chemical and biological agents.

Diller + Scofidio to redesign Lincoln Center public spaces

New York City's Lincoln Center for the Performing Arts has selected a team led by Diller + Scofidio to design the 6.3 acres of outdoor public space at its west side complex. The Diller + Scofidio team includes Fox & Fowle Architects; Cooper, Robertson & Partners, as planners; lighting designer L'Observatoire; landscape architect Olin Partnership; and graphic designer 2x4.

Diller + Scofidio, which currently has a major exhibition at the Whitney Museum of American Art through May 25 (see story, page 103), won the five-month competition against firms including Foster and Partners and Richard Meier. The redesign of the outdoor areas, budgeted at $150 million, is part of Lincoln Center's $1.2 billion construction project. Images of Diller + Scofidio's Lincoln Center design were not made public at press time.

A major component of the public space design will be a transformation of 65th Street from Broadway to Amsterdam Avenue into Lincoln Center's "Main Street." The new 65th Street will be a more pedestrian-friendly thoroughfare, with new entrances to the Juilliard School, Lincoln Center Theater, Alice Tully Hall, and the Walter Reade Theater. Construction on 65th Street will likely begin in 2004. ***J.E.C.***

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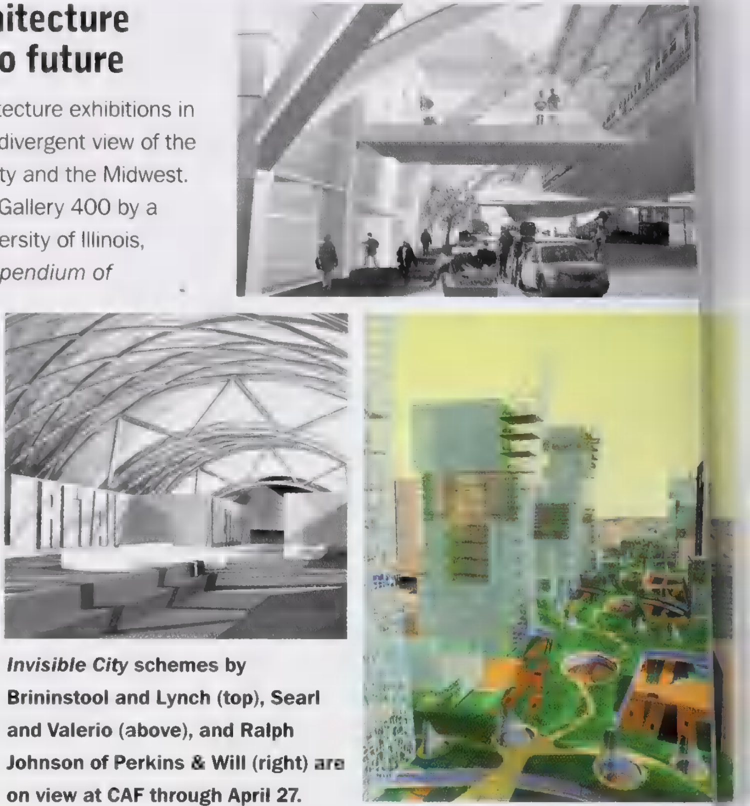
Two Chicago architecture exhibitions look to future


***Invisible City* schemes by Brininstool and Lynch (top), Searl and Valerio (above), and Ralph Johnson of Perkins & Will (right) are on view at CAF through April 27.**

Two recently organized architecture exhibitions in Chicago highlight the widely divergent view of the future by architects in that city and the Midwest.

Organized at Chicago's Gallery 400 by a group of curators at the University of Illinois, *Speculative Chicago: A Compendium of Architectural Innovation* included 52 entries by architects and designers from the Chicago region. The exhibition, which was on view in March, was developed with the premise that innovation is alive and well in Chicago's architectural community.

McLain Cutter's Bucktown House, a consciously contorted riff on a traditional gabled worker's house, was designed for Chicago's trendy artist neighborhood. On the rural front, Douglas Pancoast's "cowbot" was a spherical object programmed to roam a farm as "prairie light, seeder, and herder." Architect and engineer Joseph Burns showed actual nuts and bolts in elegant computer renderings of complex steel connections for the renovated Soldier Field. A catalog of the show, including additional projects originally submitted for exhibition, will be published in August by Gallery 400.

Invisible City: Planning for Chicago's Future looks considerably more pragmatic in comparison. Building on several expansive planning initiatives currently under development for the Chicago region, the Chicago Architecture Foundation (CAF) asked three teams of local architects to propose projects based on the new Central Area Plan, the revised Chicago Zoning Ordinance, and the Chicago Metropolis 2020 plan. The exhibition is at the CAF's gallery through April 27.

Each team stresses transportation as part of a larger development in a specific location. The husband-and-wife team of Linda Searl and Joseph Valerio create a futuristic solar tower above a proposed intermodal transit center in suburban Berkley, Illinois. Ralph Johnson and Todd Snapp of Perkins & Will suggest that the city's previously endorsed decking of a sunken expressway west of downtown can become a series of amorphous park bridges bounded by aerodynamically sculptural towers that funnel winds through the open area. Partners David Brininstool and Brad Lynch redevelop a CTA elevated station as an elegantly arched structure that ties directly into adjacent buildings. The three schemes portray exciting alternatives for the larger "official" plans.
Edward Keegan

Work by Studio Gang Architects (above) and Julie Flohr and Jason Sachs (right) for *Speculative Chicago*.

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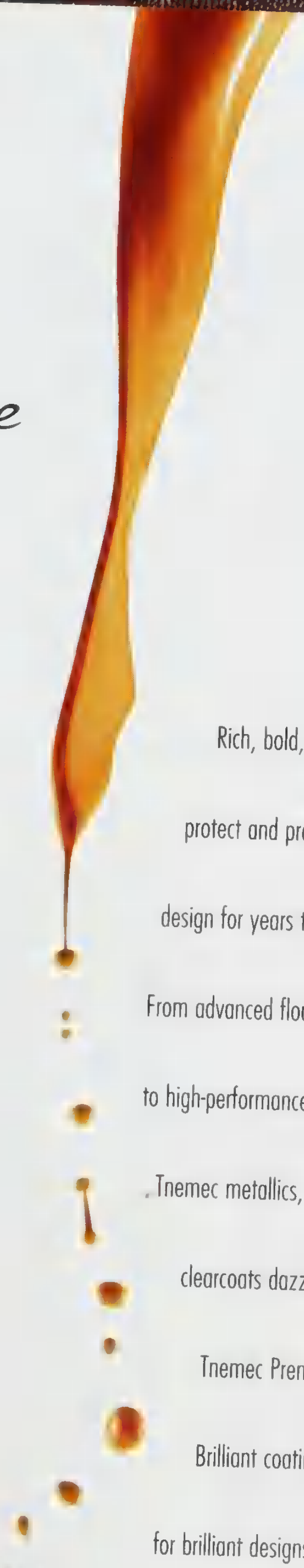

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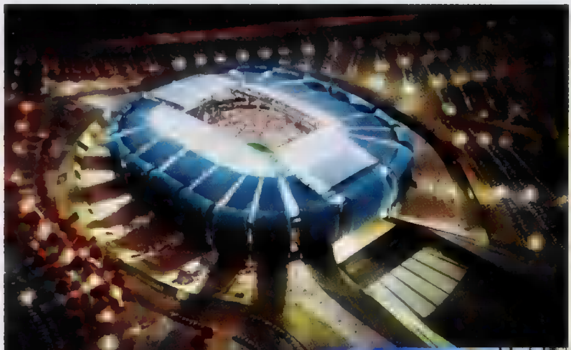
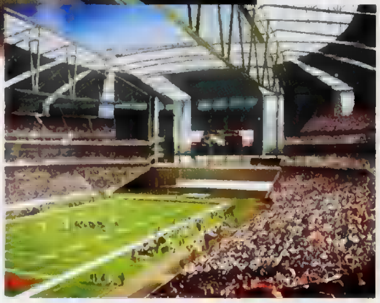
Eisenman's Arizona Cardinals' stadium to include movable fiel





The stadium will have a curved steel exterior (top) and a fabric roof (above).

A revised design for a football stadium for the NFL's Arizona Cardinals was unveiled by New York architect Peter Eisenman just prior to a March groundbreaking ceremony.

The most unique feature of the Glendale, Arizona, stadium will be a natural grass field that can be moved on a 234-by-400-foot, 12-million-pound tray. The field will be inside the stadium only on game day and moved outside for access to sunlight and rain. The tray, which will take 45 minutes to move, will be on tracks with wheels powered by electric motors.

The stadium's exterior steel skin will be curved in a form similar to a barrel cactus. The roof will have two retractable panels that can be closed, and the facility can potentially be fully air-conditioned. Vertical slots and a fabric roof will allow light to penetrate when the retractable panels are open.

HOK Sport is working with Eisenman Architects on the stadium, which will have 63,000 permanent seats and an ability to expand to 73,000 seats for major events, such as the Tostitos Fiesta Bowl or a Super Bowl. Eighty-eight luxury suites will be included on two levels. The 165-acre site will include parking for 16,000 cars.

This is the latest design by Eisenman, who has been developing designs for a Cardinals' stadium since the late 1990s. The site and design have changed due to local politics. Construction is scheduled to begin this summer on the stadium, which will be built adjacent to a hockey arena and mixed-use entertainment development opening in December. *J.E.C.*

Canadians propose national architectural policy

The Royal Architectural Institute of Canada (RAIC) hopes to create a Canadian national architectural policy—if it can agree on what it should say.

"We are trying to lobby the federal government to help create and implement a policy document that would guide how the federal government invests in infrastructure to make sure of its value in a variety of ways—through sustainability and improving the quality of life," Jon Hobbs, executive director of the RAIC, said.

But how a policy would provide that guidance remains open to debate.

Ottawa architect and RAIC president Ron Keenberg has ambitious plans to organize a series of public forums around Canada to raise the public's consciousness about architecture before embarking on a grand replanning of Canada's cities. "Everybody has different views," he said. "Mine is that I intend to ask the government for U.S. $166 million, and that will fund international open competitions for master plans for 10 to 15 Canadian cities. There would be nothing that these master plans would not touch. By 2070, there could be radical and wonderful changes."

Jack Diamond, principal of the Toronto firm Diamond & Schmitt, has more modest expectations than Keenberg for a national architectural policy. "My view is that we need performance standards, and we need to raise consciousness about the importance of design and urban design in order to indicate to people how significant a role they play in the world and in the quality of their lives."

Finland, Sweden, the Netherlands, and Scotland currently have architectural policies that focus on the quality of architecture and design as a key element of social health. ***Andrew Blum***

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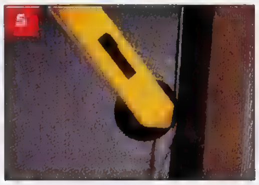

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News Briefs

The Orange County expansion (above) has a 2,000-seat hall (right).

Pelli-designed performing arts center under construction In February, the Orange County Performing Arts Center, in Costa Mesa, California, celebrated ground breaking for its first major expansion since 1986. Designed by Cesar Pelli, FAIA, the addition (pictured at right) will include the 2,000-seat Renée and Henry Segerstrom Concert Hall for the Pacific Symphony, as well as the 500-seat Samueli Theater. The limestone facade of the new building features an undulating glass wall that Pelli has likened to a stage curtain. The $200 million building will open in fall 2006.

The Institute of Peace will have winglike roof forms.

Curt Dale, FAIA, dies Denver architect Curt Dale, FAIA, a partner in Anderson Mason Dale, died in late February in an avalanche while skiing. He was 57. Dale was skiing at the Pine Creek Trailhead, in California, with his son Chris and a friend, Bob Redwine, a structural engineer with Redwine-Rezian. Both Chris Dale and Redwine survived.

Dale joined his practice in 1978 and became a partner in 1980. Partner John Anderson, FAIA, was the American Institute of Architects (AIA) national president in 2001. Andy Nielsen, AIA, a principal with Anderson Mason Dale, told RECORD, "Curt was a role model and an exceptional architect in the biggest sense of the word. He put his heart and soul in all aspects of the profession, and he will certainly be missed." *J.E.C.*

Curt Dale, FAIA

Safdie design for peace building approved Moshe Safdie and Associates' design for the United States Institute of Peace headquarters in Washington, D.C., has been approved by the U.S. Commission of Fine Arts. Safdie was awarded the commission in August 2001 from a shortlist that included Cesar Pelli, Michael Graves, Polshek Partnership, and Weiss/Manfredi.

Located on one of the last available construction sites adjacent to the National Mall, the new 125,000-square-foot headquarters will house administrative offices, a library and archives, a conference center, and a museum, arrayed around two atria, which face the Potomac River and the Lincoln Memorial, respectively. The atria are covered by segmented spherical and toroidal roof forms constructed of white translucent glass on a steel frame.

The Institute of Peace is currently raising funds for the $65 million project; the federal government donated the site. Construction completion is tentatively scheduled for 2005. Leo A. Daly is the associate architect.

Landscape architect Robert M. Hanna dies Philadelphia landscape architect Robert M. Hanna, who established the firm Hanna/Olin in 1976 with Laurie Olin, died on March 8 at age 67 due to complications following surgery. With Olin, Hanna designed the landscape for the Johnson & Johnson headquarters in 1977 and developed the master plan for Battery Park City, in New York City, with Cooper Eckstut Architects. Hanna established a separate firm in 1995, RM Hanna Landscape Architects, and completed the master plan for the University of Washington, Tacoma. Hanna taught for more than three decades at the University of Pennsylvania. *J.E.C.*

Meet your mentor online The American Institute of Architects (AIA) is sponsoring an online program to connect mentors with young architects based on personal profiles including interests, experience, and expertise. The program has an initiation and annual fee. For more information, visit www.colaboro.ws/AIA. *News briefs by David Sokol unless otherwise noted.*

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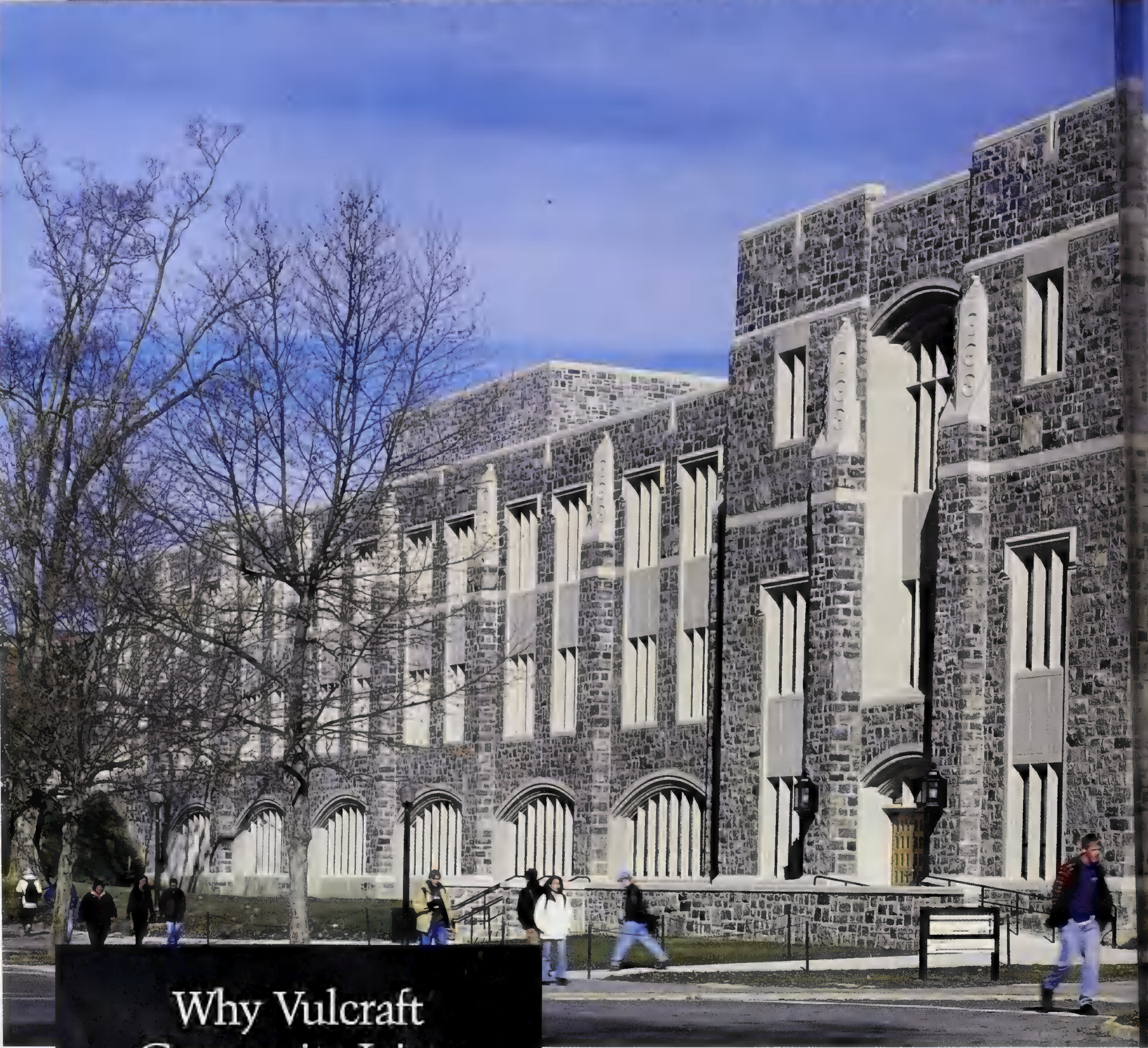

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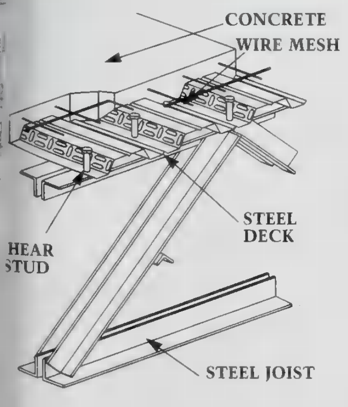
The system involved 3″ composite deck supporting 6″ of normal weight concrete wit 3/4″ diameter shear studs providing connection between the steel joists and overlying concrete slab. I all makes for popular longer floor spans while minimizing floor-to-floor heights, because HVAC



ductwork can run through the open webs of the joists. And the system is almost always less expensive than cast-in-place reinforced concrete construction.

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ENERAL CONTRACTOR: Branch & Associates • STEEL FABRICATOR: Banker Steel • STEEL ERECTOR: Williams Steel Erection

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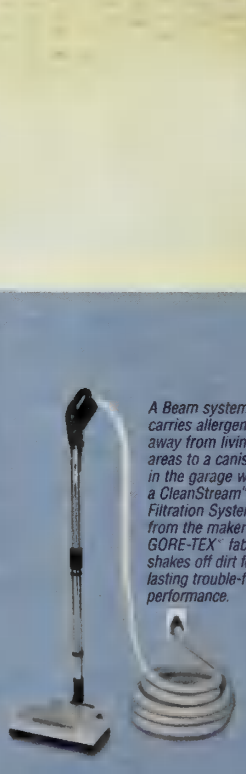

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Dates & Events

New & Upcoming Exhibitions

FAAR OUT: Six Months in Rome
New York City
April 9–May 2, 2003
Over 80 works by American Academy in Rome Fellows in Design will be on view in New York City. Among the works will be Tupperware designs by the late Morison S. Cousins, FAAR'85; Stow/Davis chairs by Robert DeFuccio, FAAR'76; V8 splash logo by Paul Shaw, FAAR'02, and lamps designed for Baldinger by Kevin Walz, FAAR'94. The exhibition's title was inspired by the acronym *FAAR*, given to Fellows of the American Academy in Rome. At the ADC Gallery. Call 212/643-1440 or visit www.aarome.org.

ROY/design series 1
San Francisco
April 19–August 24, 2003
An exhibition of groundbreaking design solutions by South African–born architect Lindy Roy will launch the first of an ongoing series devoted to showcasing the work of contemporary designers in architecture, graphic design, and industrial design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

Architecture and Design Permanent Collection
San Francisco
April 19, 2003–ongoing
This exhibition will inaugurate a newly installed, ongoing presentation of the museum's architecture and design collection. Featuring some 100 works of architecture, graphic design, and industrial design from a permanent collection of more than 4,000 objects, the survey will include well-known classics and works by up-and-coming designers and will highlight special strengths of the collection, including experimental architecture and digital design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

Designing the Rose
Boston
April 23–June 1, 2003
As part of the planning process for Shakespeare & Company's Rose Playhouse U.S.A. and celebrating Shakespeare's birthday, this exhibition will feature innovative designs for the world's first historically accurate replication of London's 1587 Rose Playhouse. Curated by architect George Marsh and the Boston architectural firm Payette Associates, the show, through photographs, illustrations, architectural drawings, and text, traces the history of the playhouse and the present-day plans to rebuild the theater using traditional building methods and materials. At the Boston Architectural Center. Call 617/262-5000 or visit www.the-bac.edu.

Both/And: Building Modern in the Context of Historic Architecture
Seattle
May 2003
The exhibition focuses on built and unbuilt projects that juxtapose modern architecture with

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historic buildings—architecture that is built in a decidedly modern manner but retains, refers to, and sheds light on the adjacent historic buildings. Exhibition projects will be drawn from the Seattle area, along with select projects from other cities in the U.S., Europe, and Canada, including projects from Foster and Partners; Coop Himmelb(l)au; Dan Hanganu with Provencher Roy and Associates; Schwartz/Silver Architects; Kohn Pederson Fox Architects; and Saucier + Perrotte Architects. At the AIA Seattle Gallery. Call 206/448-4938 or visit www.aiaseattle.org.

Alessi 2003 Coffee and Tea Piazza: City of Towers
New York City
May 2003
This exhibition will feature the North American premiere of Allesi's new selections for the Coffee and Tea Piazza, designed by a stellar roster of contemporary architects. Promising to define contemporary and digitally driven architecture at the beginning of the 21st century, this new edition will feature coffee and tea sets by William Alsop, Wiel Arets, Juan Navarro Baldeveg, Shigeru Ban, Gary Chang, David Chipperfield, Denton/Corker/ Marshall, Deszo Ekler, Massimilliano Fuksas, Zaha Hadid, Tom Kovac, Greg Lynn, Morphosis, MVRDV, Jean Nouvel, Dominique Perrault, Kazuyo Sejima, and UN Studio. At the Max Protetch Gallery. Call 212/633-6999 or visit www.maxprotetch.com.

Other Architects
Barcelona
May 2003–May 2004
A part of the Year of Design 2003, this exhibitio links the constructions built by animals with the architecture created by human beings. At the Zoology Museum, Natural Science Museum. Vis www.designyear2003.org.

50/50: Fifty Years of Boffi and Vespa
Santa Monica, Calif.
May 1–May 8, 2003
Boffi and Vespa, two pioneers of high-tech, avan garde Italian design, have organized a joint exhibition at the Boffi kitchen showroom that traces the evolution of their respective products—kitchens by Boffi and scooters by Vespa—from the post–World War II years throug the present. Using lifesize models of its most recent kitchen designs as a backdrop, Boffi will display images of the Italian kitchen's evolution through the postwar decades. There will be a display of actual scooters, including several vintage Vespas and newer models. At the Boffi Los Angeles showroom, in Santa Monica. For information, call 310/458-9300.

Harlem Lost and Found
New York City
May 3, 2003–January 4, 2004
This exhibition traces the history of Harlem from pre-Revolutionary times to World War I. Working with consulting curator Michael Henry Adams, author of the book *Harlem Lost and Found: An Architectural and Social History, 1765–1915*, the museum has drawn from its rich collections to add a unique dimension to the story of the neighborhood's architectural richness. At the Museum of the City of New York. Call 212/534-1672 or visit www.mcny.org.

Garofalo Architects: Between the Museum and the City
Chicago
May–October 2003
An architecturally distinctive, pavilionlike structure designed by architect Doug Garofalo will be the first in a series of MCA commissions for emerging and mid-career architects. At the Museum of Contemporary Art. Call 312/280-2660 or visit www.mcachicago.org.

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Dates & Events

Ongoing Exhibitions

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural implications regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org for more information.

David Adler, Architect: The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. At the Art Institute of Chicago. For information, call 312/443-3600 or visit www.artic.edu.

Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, this exhibition demonstrates the transformative powers of sustainable design. At the National Building Museum. For more information, call 202/272-2448 or visit www.nbm.org.

The Art of Structural Design: A Swiss Legacy
Princeton, N.J.
March 8–June 15, 2003
From New York's George Washington Bridge to Boston's new Bunker Hill Bridge, some of this country's most acclaimed structures are the products if Swiss design. This exhibition celebrates the contributions of a group of highly influential Swiss engineers widely recognized a the most innovative structural designers of the 20th century. At the Princeton University Art Museum. Call 609/258-3788 or visit www.princetonartmuseum.org for information.

Fantastic
North Adams, Mass.
March 8, 2003–Spring 2004
In *Fantastic*, MASS MoCA showcases contemporary artists—Miguel Calderon, Gregory Crewdson, Alicia Framis, Nils Norman, and the artist collective Temporary Services—all of whom embrace a world of hallucinatory, visionary, utopian, and otherwise "fantastic" ideas. At the Massachusetts Museum of Contemporary Art. Call 413/662-2111 or visit www.massmoca.org.

Picture This: Windows on the American Home
Washington, D.C.
March 29–August 11, 2003
Picture This presents windows through multiple perspectives and offers an entertaining two-century history of a building element that opens a view into the changing nature of American domestic life. Actual windows, advertisements, film and television clips, models, drawings, and photographs help to explore how windows establish architectural character and shape our understanding of the world inside and outside of our dwellings. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Roy McMakin: A Door Meant as Adornment
Los Angeles
March 23–June 29, 2003

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McMakin became a strong presence in the design scene in 1987, when he founded the Domestic Furniture Company in Los Angeles. The exhibition is a mid-career survey of the Seattle-based artist, tracing the development of his career in art and design and his unique manipulations of the traditional definitions of furniture and sculpture. At The Museum of Contemporary Art. Call 213/621-2766 or visit www.MOCA-LA.org.

The Swiss Section Architecture Exhibition
New York City
Through April 23, 2003
The Swiss Section exhibits cutting-edge Swiss design for cities, public spaces, and infrastructures by both emerging designers and the renowned practices of Gigon/Guyer, Conzett, Bronzini, Gartmann, and Herzog & de Meuron. At the Van Alen Institute. For more information, visit www.vanalan.org.

Ron Arad: Taking Liberties
Barcelona
Through May 12, 2003
The work of Ron Arad is well known and respected for its fusion of sculptural freedom a industrial flexibility, showing that a personal an imaginative work can also exist as an attractive and marketable product. Arad was the winner the Barcelona International Design Prize 2001 and now, in this solo exhibition, shows some of the key works of his career. At Centre d'Art Santa Monica in conjunction with the Year of Design 2003 exhibition series. Visit www.designyear2003.org.

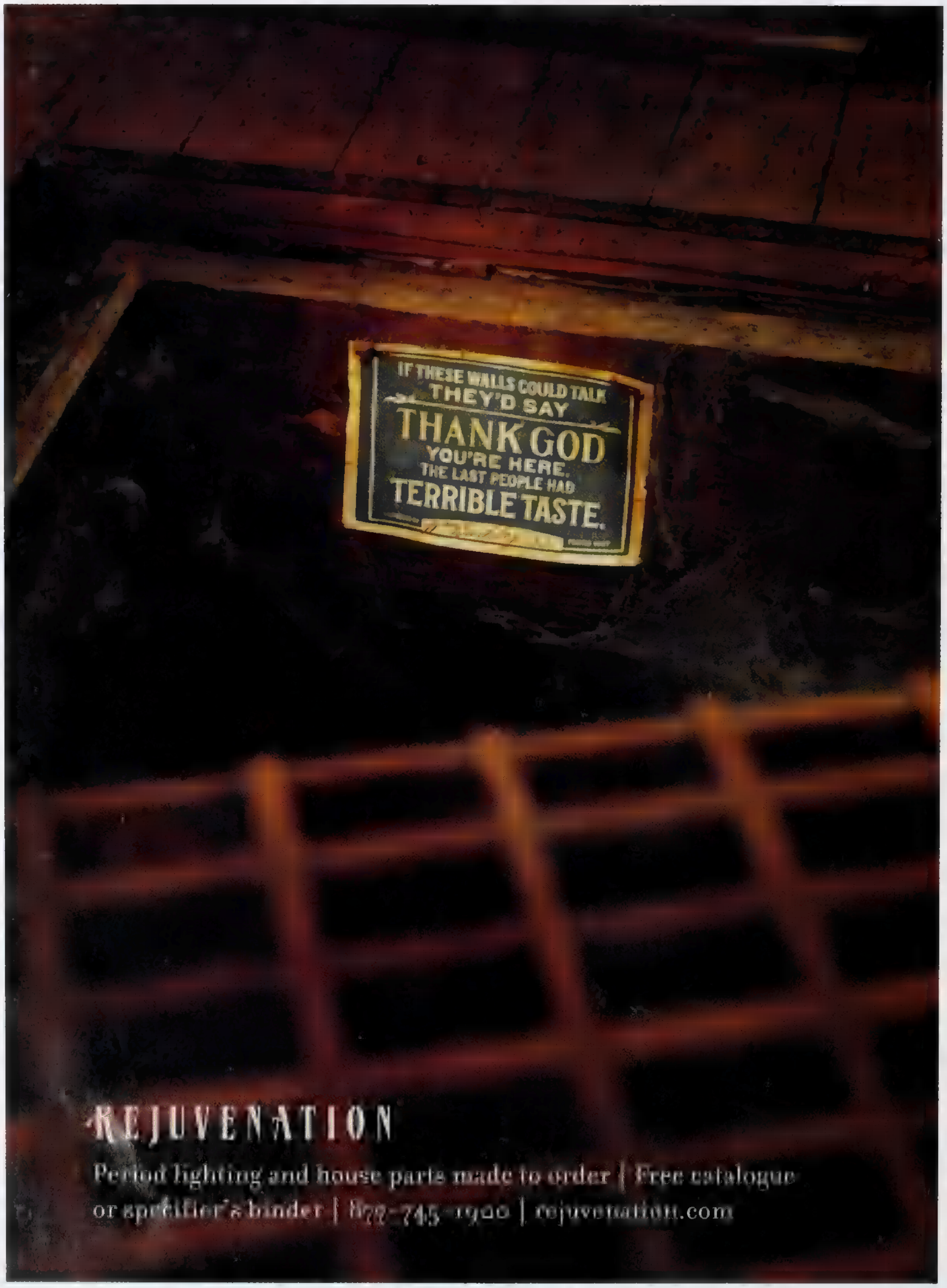
Living in Motion: Design and Architecture for Flexible Living
Barcelona
Through May 25, 2003
In this exhibition, architects and designers attempt to adapt homes and artifacts to the new demands of contemporary living. As part of the Year of Design 2003 at the Museum of Decorative Arts. For further information, visit www.designyear2003.org.

Futures2come
Copenhagen
Through June 9, 2003
An exhibition curated by Christian Bruun that started at the Max Protetch Gallery in New York City in December 1999 and has continued on to Europe. At the Dansk Architecture Center. Call 32/57 19 30 or visit www.gammeldok.dk.

Luxury Textiles East and West
Los Angeles
Through August 15, 2004
Commemorating the 50th anniversary of LACMA's Department of Costume and Textiles, this exhibition highlights extraordinary examples of the textile arts of America, Asia, and Europe from the department's extensive holdings. At the Los Angeles County Museum of Art. Call 323/857-6000 or visit www.lacma.org for more information.

Pere Noguera: Lands
Barcelona
Through August 31, 2003
A poetic reflection on the design of elements of earth used in architecture, in the home, for domestic utensils, for furniture, decoration, the garden, and everything that surrounds us. At the Ceramics Museum, as part of the Year of Design 2003. Visit www.designyear2003.org for further information.

Of Our Time: 2002 GSA Design Awards Show
Washington, D.C.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Dates & Events

March 27–October 19, 2003
Through models, drawings, and photographs, this exhibition documents the 24 public projects that received the design award honor last year. The projects show how regional heritage can be integrated with the latest building technology to create dynamic, functional, and attractive structures, spaces, and artworks for the 21st century. At the National Building Museum. For more information, call 202/272-2448 or visit www.nbm.org.

Conferences, Symposia, Lectures

Frank O. Gehry
New York City
April 23, 2003
Frank O. Gehry will lecture on architectural modeling techniques used for award-winning buildings, including the Richard B. Fisher Center for the Performing Arts at Bard College. At the Sir John Soane's Museum Foundation. For information, call 646/654-0085 or www.soane@mindspring.com.

Rick Joy: Desert Works
New York City
April 24, 2003
Joy, a finalist for the 2002 National Design Award in Architecture, discusses how sensory experience and the desert landscape influence his thinking and making of space, resulting in architecture that is both visually stunning and environmentally sensitive. In the Tishman Auditorium at New School University. Call 212/849-8380 or visit www.si.edu/ndm.

Winy Maas
New York City
May 2, 2003
A principal of the Rotterdam firm MVRDV, Winy Maas is trained as a landscape architect, architect, and planner. The architecture of MVRDV has been shaped by the firm's ongoing exploration of density and the informational processes involved in design. Its work includes large housing projects in Amsterdam, The Hague, Vienna, and Madrid. As part of the Architectural League of New York's lecture series at the Great Hall, Cooper Union. Call 212/753-1722 or visit www.archleague.org.

Talking About Living Inside the Grid
New York City
May 3, 2003
An all-day symposium inspired by the group exhibition *Living Inside the Grid*, at the New Museum through June 15, 2003, will feature discussions on three themes: the history of the grid in contemporary art and culture; the relationship of th body to the grid; and current theories on how to "get around" the grid. In the Great Hall, Cooper Union. Call 212/219-1222 for reservations or vis www.newmuseum.org for further information.

Lightfair International
New York City
May 5–8, 2003
This year's Lightfair promises to be the biggest and most comprehensive annual architectural and commercial lighting conference to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit www.lightfair.com.

Public Architects Training Workshop
San Diego
May 7, 2003
A preconvention workshop presented by the AIA Public Architects PIA that will cover such topics as sustainable design, building security, the design-build process, child-care-facility requirements, community involvement, how to win and establish design awards, real estate, innovation and public schools. At the San Diego Convention Center. Call 202/626-7386 or visit www.aia.org.

National Design Triennial Conference
New York City
May 16, 2003
This cross-disciplinary conference will explore the major forces shaping design today through keynote addresses and multimedia presentations from curators and designers of products, interiors, architecture, furniture, graphics, film, and fashion. The program features work by studios featured in the National Design Triennial, including BluDot, Diamond + Baratta, Escher + GuneWardena, Fuseproject, Champion Graphics, and Toledo/Toledo. In the Great Hall at Cooper Union. Call 212/849-8380 or visit www.si.edu/ndm.

Tour Abitare Italia
New York City
May 19, 2003
Showcasing the best of Italian home design and celebrating some of New York's emerging fashion designers, the fifth annual Tour Abitare Italia features showroom receptions, exhibitions, and

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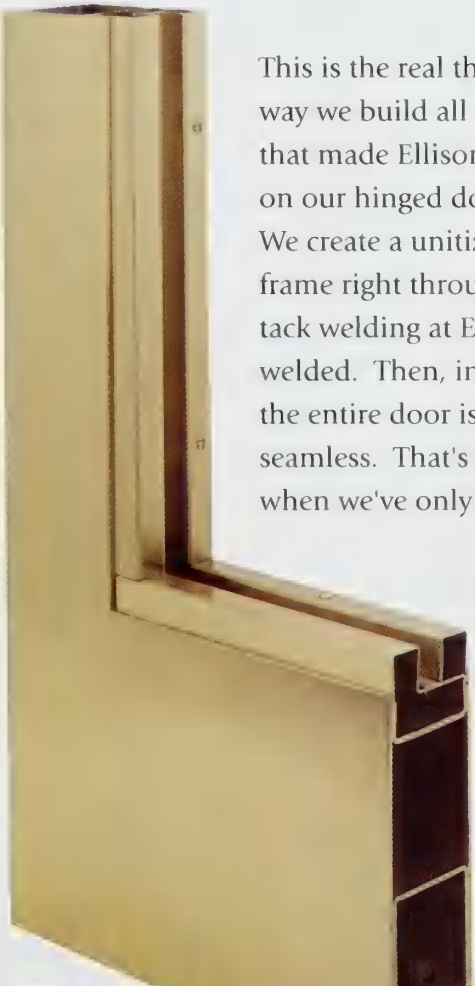

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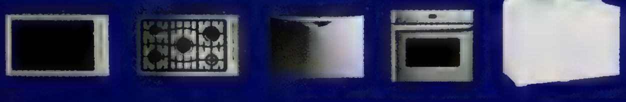

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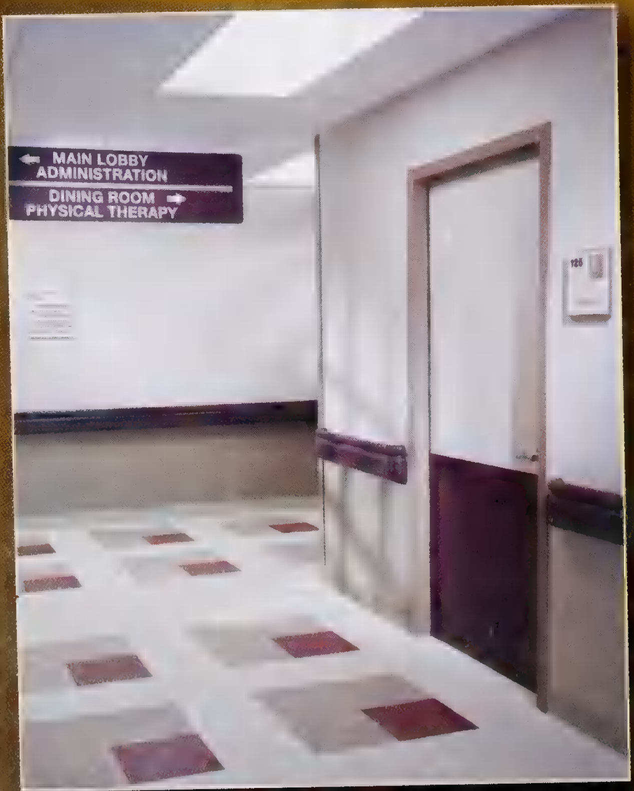

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Cairo, once the Paris of the Nile, tries to regain design stature

Correspondent's File

By Paul Bennett

The largest urban area in Africa, Cairo, Egypt, has evolved over the past 20 years into a sprawling megacity. Its 17 million inhabitants are jam-packed into the labyrinthine Islamic city, a maze of narrow streets and tenements dating back to the 13th century, and the Paris-inspired modern city, planned and built in the 19th century with its radial street plan and wide promenades. Architecturally, Cairo features stunning Islamic monuments (more than 400, according to a recent survey) hemmed in by vast swaths of so-called "informal" housing—unzoned, unregulated development that often extends to the horizon. The housing crunch is so bad that squatters have taken root in the cemeteries adjacent to the Islamic center, the so-called Cities of the Dead.

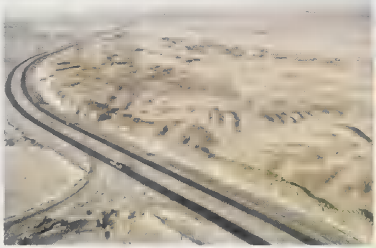
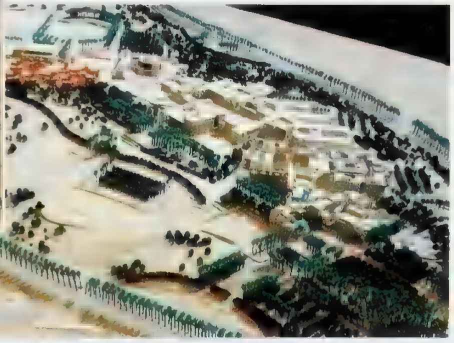
Contemporary design in Cairo is in a similar state of disarray. The most visible projects are the luxury hotels lining the Nile designed and built by international developers and their in-house architectural staffs, usually to rather bland effect. Local architects, with some exceptions, have been confined to the classrooms of Cairo University. There is a general agreement among critics that today, 14 years after the country's most influential architect, Hassan Fathy, died, that the profession in Egypt is in crisis. A lack of building restrictions, outdated laws for licensure, and inadequate education reached a breaking point in 1992 when a number of poorly built structures collapsed during a major earthquake. The situation may have slightly improved—there have been no notable collapses in the past few years—but no one is claiming that Cairo has yet regained the status of "Paris of the Nile."

A writer based in Rome, Paul Bennett is a former editor at Landscape Architecture *magazine.*

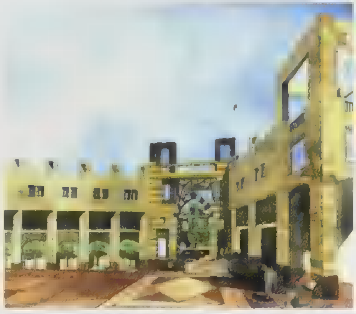
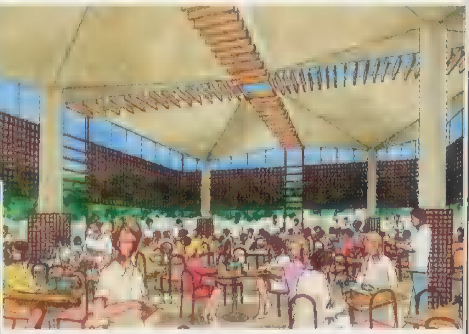
Setting a standard

The wholesale relocation of the American University (AUC) may shake things up in Cairo. This small liberal arts college is relocating from its downtown Tahrir Square main campus, where it has been since 1919. Ground breaking was held in February for the AUC's 260-acre, $250 million campus that will be built from scratch in New Cairo, one of several new settlements being built along a ring road that surrounds Cairo in order to alleviate the population pressures in the city. New Cairo is being planned as a middle-to-high-income city for an expected population of 2.5 million people.

AUC representatives say that the school intends to raise standards and demonstrate proper building methods as a result of a Western-style planning and design process. That process began in 1999 with an international competition for a master plan for a campus with up to 7,000 full-time students. Distinguished jurors included Charles Correa, Ricardo Legorreta, and Ismail Serageldin, the director of the new Alexandria Biblioteca. A small firm called Boston Design Collaborative took top prize with a compact, topographically sensitive proposal for clustering campus buildings around a green spine. The AUC hired Sasaki Associates of Watertown, Massachusetts, and Abdelhalim Community Design Collaborative (CDC) of Cairo, to flesh the plan out, portion it into bids, and eventually manage a design team that includes Legorreta + Legorreta (in charge of student housing and the campus center), Ellerbe Beckett (athletic facility), and Hardy Holzman Pfeiffer (library). Sasaki and Adbehalim CDC divided the rest of the campus buildings between them, with the former taking most of the academic buildings, and the latter in charge of the theater, administration building, and bookstore. Carol R. Johnson Associates has been hired to design the landscape. The new campus is expected to be ready for fall 2006 classes.

The American University in Cairo (model, above right) will be built on what is now desert (above). The campus will include an administrative building by Abdelhalim CDC (below) and a campus center by Legorreta (below right).

"The developing world too often looks to the West for its building forms," commented Victor Legorreta, Ricardo's son and a partner in the practice. "But the AUC wanted to do something different. They wanted 'modern Egyptian architecture.' What does that look like if it doesn't look Bauhaus, Brutalist, or USAID? That's the challenge."

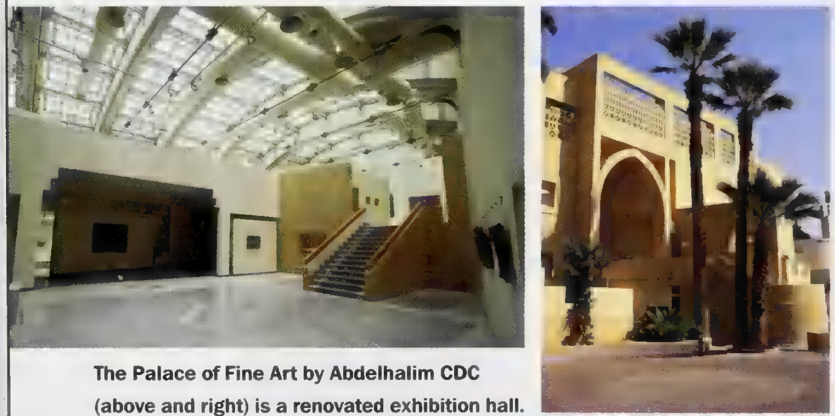
The AUC architects, without

On what has been a garbage hill (left), the Aga Kah Trust for Culture is planning a park (above).

exception, talked about avoiding pastiche. During 12 months of workshops in Cairo, they undertook an in-depth study of Egyptian architecture. The seemingly haphazard and hypergeometrical pattern of spatial relationships in the medieval Islamic city, rather than any specific form, inspired much of the campus design, in which buildings and interior spaces are shifted and canted in innovative ways.

Urbanism abandoned?

Egyptian architects and planners have openly expressed concern that the AUC is abandoning Cairo for the suburbs. Although the university hopes that New Cairo will someday be a metropolitan center of its own standing, planners have noted that this city in utero lacks any urban design guidelines or zoning restrictions. "New cities are a failure in Egypt," a planner, Khalid El-Adli, flatly stated. "Planning occurs here in a vacuum."



The Palace of Fine Art by Abdelhalim CDC (above and right) is a renovated exhibition hall.

In order to break loose of international Modernism, which dominated Cairo architecture in the midcentury, local architects have embraced historical revivalism, according to Ashraf Salama, a professor of architecture at Al Azhar University. Anything antique, from pharaonic geometries to Islamic details, are employed to "foster a sense of belonging" and create an idea of Egyptian-ness.

In tandem with AUC's decision to move to New Cairo, the Egyptian Museum is planning to build a new facility in Giza, 12 miles outside of the city. Although it will continue to use its 100-year-old Neoclassical building in the center of town for storage, the museum's primary collection (and the several thousand daily visitors that come to see it) will be moved out of the city. With the help of the International Union of Architects, the museum has embarked on a two-stage anonymous design competition for the $350 million project. At press time, the first stage had been completed and 20 firms were requested to submit further drawings. The jury will select a winner in late April.

One institution that's attempting to buck the anti-urbanist trend is the Aga Kahn Trust for Culture (AKTC), a branch of the sprawling Aga Kahn network of agencies. AKTC is in the construction stage of an 80-acre urban park on the eastern edge of the medieval city. The park actually reclaims a hillock of garbage that residents have been throwing over the city's wall for the past 1,000 years. Part of the design includes an excavation of this wall, which hasn't been seen for centuries.

After working with several architects, including both Sasaki Associates and Abdelhalim CDC, the AKTC selected local landscape architect Maher Stino to complete the design. Stino has been challenged to work with an unforgiving topography: The site features three municipal water tanks sunk below grade, and a fine powder soil. Several structures will be included in the park, including a restaurant by architect Rami Al-Dahhan.

In addition to building the park, the Aga Kahn is involved in restoring several monuments in the neighborhood, including a minaret and an aristocratic house, and providing low-interest loans to homeowners for architectural improvements.

Investing in Cairo

Although words like "crisis" and "problematic" are constantly used by Cairo architects when describing the state of local architecture, there is a small but growing body of exceptional projects being built that indicate an undercurrent of vibrant creativity.

Abdelhalim CDC has garnered local praise for interpreting traditional Islamic architectural ideas into a modern milieu. Its recent Palace of Fine Art is an impressive conversion of an old exhibition hall, in which interior spaces alternately open and close around a central open atrium to create an interplay of light.

Another notable project is the Om Kalthoum Museum located near the ancient Nilometer river gauge. Designed by Egyptian architect Akram El-Magdoub in collaboration with Italian architects Maurizio di Puolo and Enzo Serran the museum is a richly textured building that showcases one of the first uses of multimedia programming in the city. In the garden, situated between the museum and the river, stands a 23-foot steel tower with a radiating fan of wires acting like a prow to connect two o Cairo's most potent symbols, the mesmerizing singer Om Kalthoum and the Nile.

The guesthouse by Ahmad Hamed abstracts traditional Islamic design.

Ahmad Hamed, an architect who teaches at the American University in Cairo, has executed several small but impressive projects, including the 1999 conversion of a chicken coop into a guesthouse and prayer room for a Syrian businessman on the outskirts of Cairo. The project has a high level of detail, including stained-glass windows and an ornate wooden screen, both abstracted from traditional Islamic design.

Building without drawing

Hamed, who was educated in Scotland, blames weak laws—and the fact that the regulations governing practice are 50 years old—for the limited amount of great architecture in Cairo. But he also tries to frame this moment as an opportunity. He says that, ironically, being constrained to do small projects with even smaller budgets is liberating because he is forced to get closer to the design, and, in a way, to be a more honest architect.

"I've built things without drawings," he says proudly, "using cane marks in the sand like a medievalist. You can't build like that in America." ■

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For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

What is it about the Midwest? It seems as if there's a sort of migration going on among the vanguard of the design professions toward the middle of the country. This month, **archrecord2** marks the fourth architect from Michigan to be featured in the **Design** section in its two years of existence. One might even call it a trend. Plus, in **Live**, you can find an innovative first-year design program being taught at the University of Cincinnati. Maybe there's something to this.

DESIGN

A short story about Erik Hemingway

To Erik Hemingway, a peripatetic architect who for the past few years has been based in the Detroit area, architecture is a movable feast. In his view, architects should not come to projects with fixed ideas, but should react to conditions, using their knowledge to develop solutions.

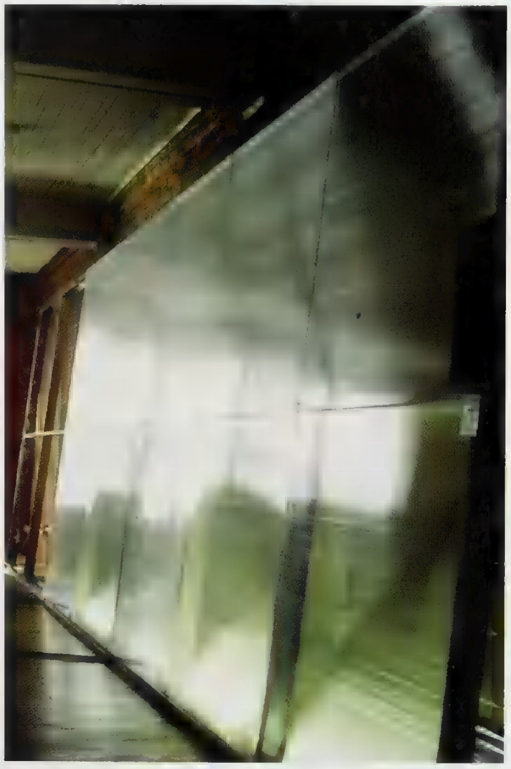
"I'm not really interested in a formula for projects," Hemingway says. "Each particular project creates a kind of opportunity, given its time, its context, its client. It inspires a kind of event-based architecture, rather than one based on the thought that 'that was a really nice detail on the last project, let's try to do that again.' "

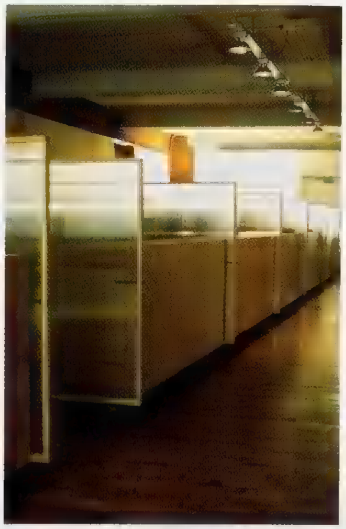
Hemingway earned his undergraduate degree at California Polytechnic State University in San Luis Obispo before an expatriate stint in London working for Zaha Hadid. He then returned to the U.S. and worked with Arquitectonica, both in Miami and San Francisco. Then, after earning a graduate degree at Columbia University, in New York City, he returned to San Francisco, where he founded Hemingway+Associates and stopped moving around for several years.

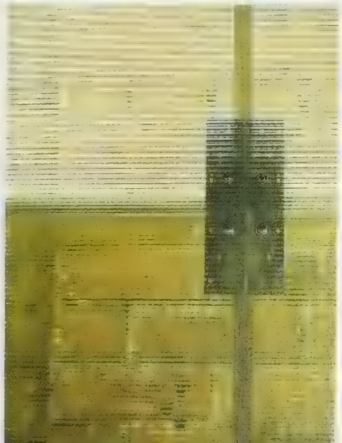
It was in San Francisco that Hemingway developed his firm's working style, dividing time among competitions, installations, and actual built work. "The competitions support the ideas for the projects," he says, "and then those small projects and the small cash flow that they bring in support the budget for the competitions."

Still working in San Francisco in 1999, Hemingway felt that the city's economic bubble would burst. He began to think about leaving. Around that time, his partner Allison Warren was accepted for graduate study at the Cranbrook Academy of Art, near Detroit.

"Practically the same day," Hemingway says, "Lawrence Technical University called me up about a teaching job." He hadn't heard of the school. "I asked them how far they were from Cranbrook," he says, "and they said 15 minutes. So it seemed like the next phase for us."







OCT[an]E,
Detroit, 2002

Hemingway+A/studio designed and built this 2,000-square-foot graphic design studio using unorthodox materials to reflect the sensibility of the clients, rather than approaching the project with a preconceived architectural idea.

(continued from previous page) Despite never having lived in the Midwest, Hemingway found Detroit appealing, so he accepted a position with Lawrence.

"My thesis at Columbia was on how Los Angeles was a 20th-century construction of industry and the automobile," he says. "And in a strange way, Detroit and Los Angeles have a lot of similarities. The weather is different and the industry is different, but they have the same sort of relationship to the decentralized urbanism that I'm very interested in."

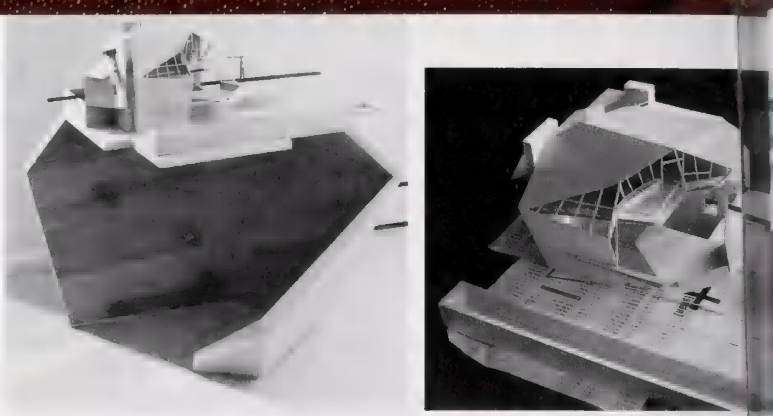
He and Warren share a house north of Detroit, which serves as their home, their studio, and an ongoing project for the firm, which was renamed Hemingway+A/studio after the move. This blurring of different aspects of Hemingway's life extends outside the house as well.

"There's not a large distinction between my studio at school and my studio at home," he says. "I have a lot of students work with me."

The working arrangements lead to a fairly informal atmosphere around the studio: "I'm sort of intense in my relaxed mode," Hemingway says. "I give everybody the time to finish what they're working on, since I know I'm on the slower side myself. But then when the deadlines approach, I ratchet up the pressure a little bit to get the project out on time. It's an ebb and flow."

His relaxed attitude may hint at his flexibility, but when he states his firm's mission, that flexibility becomes a precept: "The position of the practice is to pursue critical architectural ideas," Hemingway says, "and somehow manifest them in whatever form they need to be manifested, whether it's on paper or an exhibition, or taken to some kind of finality." *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 to see more projects from Hemingway+A/studio.



sub[URBAN] lawn,
Beverly Hills, Mich., 2003
A renovation of a 1950s ranch house adds three levels: the "sub" level contains studio space; the "urban" level adds an upstairs bedroom; the "lawn" level transforms an overgrown backyard.

exhibition[ISM],
Southfield, Mich., 2001
At the new Gwathmey Siegel building at Lawrence Technological University, Hemingway projected alternating images of advertising and his own architecture on an exterior wall while he lectured inside.

LIVE

Beyond the humming refrigerator

The group Six Hand Movements, playing homemade musical instruments.

Goethe famously described architecture as "frozen music." A less canonized poet, Elvis Costello, said that writing about music is like "dancing about architecture." But aside from esoteric bons mots, the arts of architecture and music appear to have little in common.

So leave it to a university to finally figure out the relationship.

About 120 first-year University of Cincinnati architecture and interior design students worked in groups to design, build, and play musical instruments constructed from discarded appliances and a few parts picked up at local hardware stores. The students then had to perform original compositions on their instruments. The concert, on January 22, played to a packed house.

Marc Swackhamer, an assistant professor of architecture, helped to organize the project, along with the rest of the first-year studio professors.

"The idea here is that students should stretch themselves beyond what they're accustomed to or comfortable with," Swackhamer said.

Susan Strike, a first-year architecture student, built a slide guitar, using a discarded refrigerator shelf as a base. The strings of the guitar, however, were purchased.

"We could spend money on our project, as long as most of it was built from trash," Strike said.

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(continued from previous page)

used for these instruments came from an earlier first-year studio project, the disassembly of appliances. The students used the parts as models for drawing practice, but their reuse as instruments also taught a lesson in resourcefulness.

"Our whole first-year program is about creativity and using resources," Strike said.

The students built the instruments on their own, but they were grouped together into bands for the performance.

"We didn't know who we would be playing with when we designed our instruments," Strike said, "so we couldn't pick a group of instruments that would go together. We had to make it work."

The range of instruments made for an eclectic mix onstage: PVC-pipe saxophones, harps made from ovens, zithers, whistles, and an array of percussion instruments.

The instruments didn't always sound like their builders planned them to. Justin Smith, a student, said that his copper-pipe wind instrument "makes a sound more like a choo-choo train than music."

Despite the unexpected, the concert went off well, and the students have moved on to building something more overtly architectural: staircases. But the lessons learned from the pairing of the seemingly unrelated disciplines of architecture and music will stick with them, or at least their professor hopes so.

"We can learn a lot about design issues from everyday life, everyday objects," Swackhamer said. "We can learn the principles of design from cuisine, art, a movie, a magazine, a building, and yes, from old appliances." *Kevin Lerner*

For more stories about architecture students, and for information on how to submit your story, go to: architecturalrecord.com/archrecord2

Amy Everard plays the chimes with her group, The Mechanics (top), and Will Yokel poses with his elaborate wind instrument.

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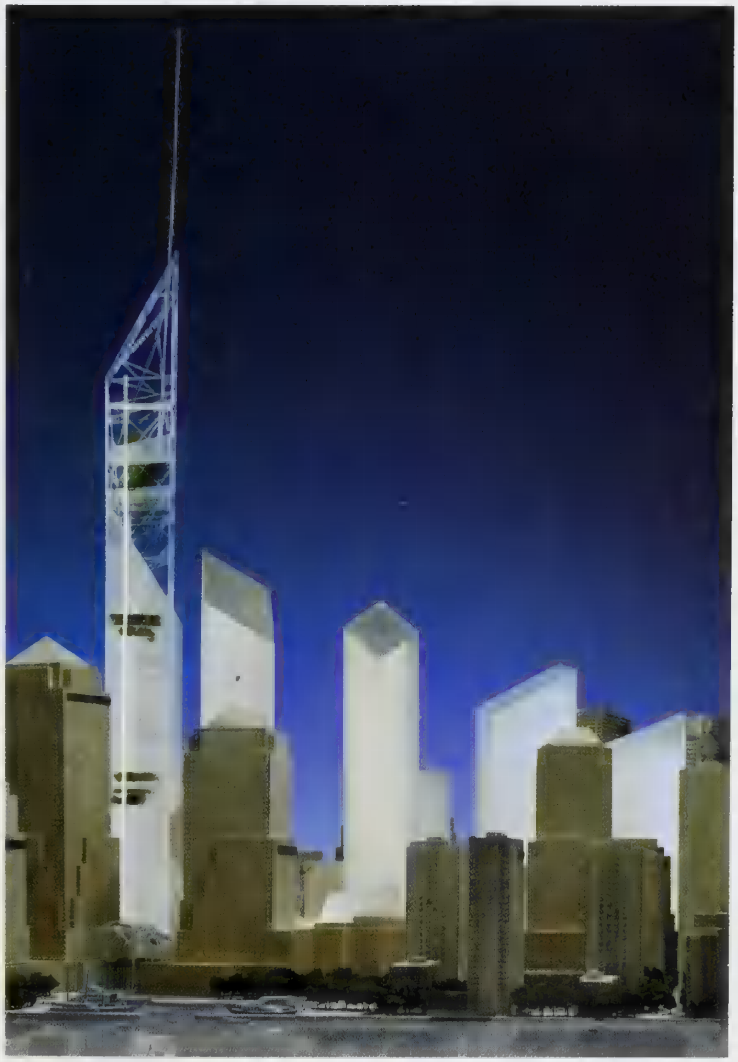
Will Libeskind's plan for the World Trade Center site become a massive design swap?

Commentary

By Joseph Giovannini



Libeskind's skyline includes a plan for the tallest building in the world, at 1,776 feet, with communication instead of gardens on the top floors.

Daniel Libeskind, beaming, may have captured front page headlines when his "bathtub" scheme won the competition for the World Trade Center site. But the real winner is developer Larry Silverstein and his architects, Skidmore, Owings & Merrill (SOM). Libeskind actually secured only 400,000 square feet of the project for cultural facilities, while Silverstein's architects—if the developer prevails in his insurance claims—get the 10 million square feet of office space equivalent to the square footage of the trade towers. SOM would handle roughly 96 percent of the project and Libeskind, 4 percent.

Having been exposed to Libeskind's design for the whole site through the massive publication of his scheme, the public has been allowed to believe that his office buildings will be built substantially as designed. They will not. Nor will Libeskind's 70-foot-deep bathtub be built as originally conceived, with exposed slurry walls and bedrock. The pit as now planned will be a shallow 30 feet, with a controversial bus terminal for tour buses being proposed beneath the memorial pit. The sleight of hand now under way amounts to one of architecture history's great deceptions, a design swap of colossal proportions slipping by under the nose of a world saturated with watchful media.

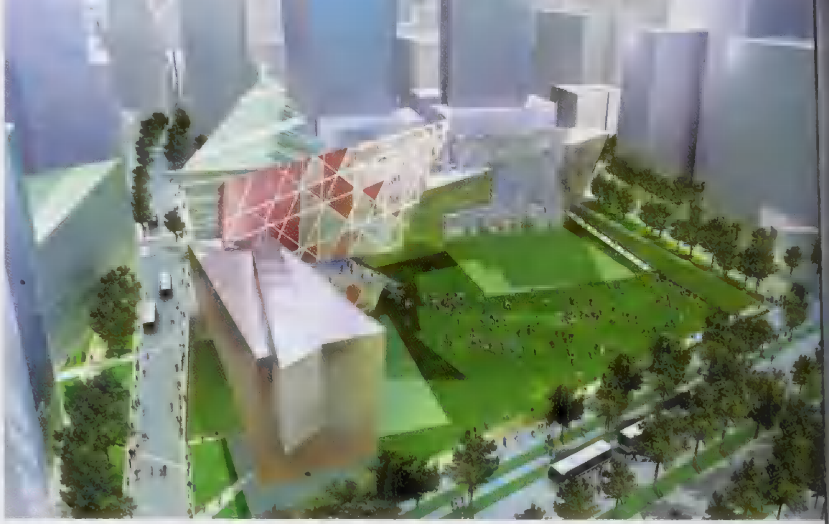
The capitulation to the commercial interests essentially occurred when the Lower Manhattan Development Corporation and the Port Authority reduced a field of seven teams to the two semifinalists—Libeskind and the Think group—which both proposed strong memorials that effectively became Trojan horses hiding developers. From the beginning, Think reasoned that funds for cultural facilities were better protected if isolated in a memorial precinct rather than dissipated through the whole site. The architects Rafael Viñoly, Frederic Schwartz, and Shigeru Ban decided to forgo the design of the office buildings and proposed only scaffolds with several cultural buildings suspended high in their framework.

At the heart of his project, Libeskind left the deep bathtub, which he bounded on two edges with low-rise cultural buildings that were framed in turn with high-rise office towers. Though basically conventional, the freestanding office buildings were designed with facades that shared the ethos of the rest of the project. Libeskind based his design on a secondary geometry representing the paths of arrival of rescuers, which he overlaid on a newly recreated street grid. Writ into the facade, the fractal geometries mystified the towers and eluded easy understanding. The apparent irrationality acknowledged yet transformed the history of the troubled site.

When, in his initial presentation, Libeskind noted his crystalline office towers could be designed by other architects, the developer and officials obviously listened. Prior to Libeskind's selection, Silverstein laid claim publicly to the towers, saying they were his alone to rebuild, with architects of his choosing. Whatever his actual motives may be, the terms of his insurance claim force him to display intent to build. SOM, one of the seven contenders in the recent competition, withdrew, citing conflict of interest. Silverstein's court architects, SOM was about to lose the competition but get the bigger commission.

This winter, the architectural politics surrounding 9/11 emerged as a huge chess game, and officials and developers essentially checkmated a public playing blind. The

Joseph Giovannini is a New York City architect and the architecture critic for New York *magazine.*



The Libeskind scheme includes large open areas sunk 30 feet below grade.

Libeskind design could be stripped down to the bathtub and 400,000 square feet of attendant cultural facilities, and Libeskind would still appear to be the winner.

In his bid to get the job, Libeskind not only conceded towers that were not really his to give away, but also compromised the bathtub at the core of his poetic idea. In one of his more cloying analogies, he said that the 70-foot-high slurry walls had withstood the attacks, like America's democracy. Ironically, they apparently couldn't withstand the putatively democratic process of rebuilding the site. The Port Authority, which hasn't acted as a visionary institution since the Twin Towers were built, has forced acres of bus parking into the bathtub, a myopic strategem that will take visitors off New York's ample public transportation systems while clogging the city's vehicular arteries. The parking decks cost the tub its proportions, aura, and sense of authenticity. Visitors will no longer descend into the depths of the disturbed site as though into another emotional and environmental state, but will head down to what looks like a putting green growing on elevated decks buttressing the weakened slurry walls. The slurry walls do in fact need to be reinforced, but they could be buttressed in a way that retains the raw materiality that gave the Libeskind proposal its character. The pit now looks sanitized.

THE CITY AND STATE HAVE LOST THEIR WILL AND ABILITY TO CREATE THE INFRASTRUCTURE OF A PUBLIC REALM.

A project that now fails at the ground also fails in the sky. Libeskind maintains that the master plan can survive a change of architects if the volumetric massing remains roughly intact, spiraling up to his 1,776-foot-tall tower. But the gardens originally conceived within the tower as a symbol of renewal are now gone, replaced by a restaurant and communications needle. The tower has virtually no occupancy and will count in the skyline only as slender anecdotal punctuation.

Frank Gehry once said that a project can't lose more than about 15 percent of its core ideas and still survive. Libeskind's plan, even at the outset, has already lost much more. The *New York Post* headlined the scheme "A Sham" on one of its covers. The deep bathtub, now shallow and manicured, has lost its presence, and the towers, once thin and mysterious, have been fattened for market. The footprints have been squared, eliminating most of the secondary geometries that distinguished the plan, lending it edge. The virtually unprogrammed tower that might have reclaimed the skyline is too slim to consummate a spiral of chunky office buildings. The needle doesn't have the necessary visual mass.

All along, the LMDC and Port Authority have maintained that they were not undertaking an architecture competition but a search for a land-use plan that would serve as the basis for reconstructing the site. However, the sex appeal of Libeskind's scheme helped sell a plan that, ironically, is hardly different from two of the schemes presented in July by the hapless Beyer Blinder Belle. That firm lost the battle because the architects simply planted dummy models as space holders rather than showstoppers like Libeskind's fractalized crystals. The architecture that sold the project has now been removed.

Beyond the conspicuous deception lies an expanse of missed opportunities. Burying West Street could have yielded land for thousands of self-paying apartments, but the idea was summarily taken off the table, removing a residential population that could have both breathed life into downtown and jump-started demand for New York's neglected harbor and waterfront. Nowhere did the Port Authority encourage designers to reconnect the city to a body of water that ranks as a potential national park and recreation area. Faced by the glut of office space, officials did not try hard enough to convert office to residential use: The token amount of residential space in Libeskind's scheme was removed.

New York still runs on its great old public works—its bridges, tunnels, subways, and parks. But, strangely, nothing of a monumental scale has been built in the city since the Twin Towers. The city and state have lost their will and ability to create the infrastructure of a public realm: Clearly this competition has made obvious that the model of a public/private partnership hits a glass ceiling when it comes to vision. New York now faces the prospect of a downtown skyline around Ground Zero that is indistinguishable from Houston's or Dallas's—cold, conventional, and corporate, even if dressed in the latest curtain walls.

So much for transparency in the process and integrity in the vision. But no amount of rhetoric and PR will be able to spin the commercial juggernaut about to engulf the site if the developer prevails. The Libeskind scheme, sadly, is now a decoy. The televised renderings that depict a rebuilt Ground Zero from the pit mask 10 million square feet of high-rise buildings of unknown design. The new non-Libeskind view from the other side, however, has never been presented to the public.

Ironically, Libeskind's proposal has shrunk so much that there is now enough room after the bathtub and his cultural buildings for a new competition to design the site. Alternatively, the original contenders could now be reconsidered, such as the inspired project by United Architects, or a variant of the same idea of interconnected buildings, by the Richard Meier team. Libeskind is now basically designing a cultural park, leaving the rest of the site up for grabs.

There are only two hopes. The first is that Libeskind will rally to reclaim what he had to concede to get the job. He owes it to himself and the public because his talent has been used as a vehicle to dupe the public. The second hope is that if Silverstein is unhappy with his insurance settlement, the city and state will step in and buy out his stake and initiate other plans to rebuild the city.

Governor Pataki stood in front of Libeskind's deceptively outdated model with the original high-rise structures and pronounced the usual bromides, no doubt thrilled that his administration survived its architectural trials in the aftermath of 9/11. But this is a sacred design trust that cannot be broken: The buildings that emerge should act as a cast resetting no less than the soul of our nation. Pulling a fast one just won't do. ■

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TOP GUARD

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What becomes a legend most? Restoring Wright's greatest work raises some sticky questions

Critique

By Robert Campbell, FAIA

Maybe it could be in New York City at the Whitney Museum of American Art? Maybe at the Museum of Modern Art? Wherever. Somebody should mount an exhibition on Taliesin East.

I've stolen this idea from Neil Levine, the noted architectural historian and Frank Lloyd Wright scholar at Harvard. Such an exhibition would not present Taliesin as a finished work of art, because it never was any such thing. That would be the whole point: to understand Taliesin (and by extension, all architecture) as a process. Taliesin East is not so much a built object as an architectural garden that Wright seeded and weeded for almost half a century.

A work of architecture is always a narrative, unfolding over time. It is a story that never ends, with future chapters still to be written. Even if the building remains the same physically—which rarely happens—it changes anyway because of alterations in the climate of appreciation by which it is known. It was T.S. Eliot who wrote that whenever we make something new, we alter the past. Taliesin is the ideal case study.

Rising from the ashes

Taliesin East is, of course, the house that Wright built for himself near Spring Green, Wisconsin, in the farmland where he spent much of his boyhood. In my opinion, it is his greatest work. (Levine, by the way, shares that opinion.) Twice Taliesin burned and was rebuilt. Each rebuilding incorporated fragments—sometimes charred—of an earlier house. The house also changed whenever Wright's life changed: He altered it to fit, like clothes.

"It's exciting to think about reconstructing the history of Taliesin," says Levine. "It's like these great old sites that had many layers, like Troy. And the documentation is there." He'd like to see the house presented in an exhibition in six parts: 1911, 1914, 1924, 1937, 1949, and 1959. He thinks we'd learn a lot not only about Wright, but about the nature of creativity.

There's another reason for an exhibition on Taliesin. The place is falling apart. It needs our love and our money.

As Wright often said, he built Taliesin not *on* the hill but *of* it. That's part of the problem. The house functions as an unintended retaining wall. The soil is only about 6 feet deep, resting on rock. As water tries to percolate down the slope, it builds up behind the foundation walls, creating hydrostatic pressure. Twice in recent years the result has been a mud slide. Chunks of the hill's earth have slipped laterally, in a shear failure against the rock beneath. So far, there's little damage to the house, just "long-term creep," in the words of Tony Putman of the Taliesin Associated Architects, who still use the house. But repairs are urgent.

John Eifler is a Chicago architect who is consulting on plans to solve these problems. "First, we have to stabilize the hill on which the building sits," Eifler says, "and then we have to stabilize the way the building sits on the hill. Both of those are pretty tall orders. They require a lot of underpinning and concrete, and it all has to be done in a way that is gentle and not noticeable."

The sliding hill is only one of Taliesin's problems. Wright built his house like a stage set. Outdoor stone terraces rested on wood joists, which predictably rotted. Glass met stone without engaging it, so you can sometimes put your finger between. The heating system no longer works, and in winter there are icicles indoors.

Designing for an audience

Beyond the natural decay, there have been unexpected disasters, such as the storms the locals call

Contributing editor Robert Campbell is the Pulitzer Prize–winning architecture critic of The Boston Globe.

Wright built Taliesin on the side of a hill (top), which turns out to be a slippery slope. The house (above) needs as much as $60 million in renovation work.

"microbursts." An icon of Taliesin was the great oak that occupied the main courtyard. A microburst sent it crashing into the roof of the old drafting studio several years ago. That damage has now been repaired, but at the cost of money that might have been spent on other repairs.

"I guess Wright decided that the next generation would take care of things," says Eifler. "Taliesin was theater design. The point was to impress clients on a very tight budget." The late Wesley Peters, Wright's leading disciple in the Taliesin Fellowship, once told me that the master would sometimes rout his young student apprentices out of bed in the early morning and set them to pouring concrete on the bare earth, in order to build his latest brainstorm. (You can argue that Taliesin—like Jefferson's Monticello—was in part erected on the backs of a slave culture, the difference being that the apprentices paid for the privilege.)

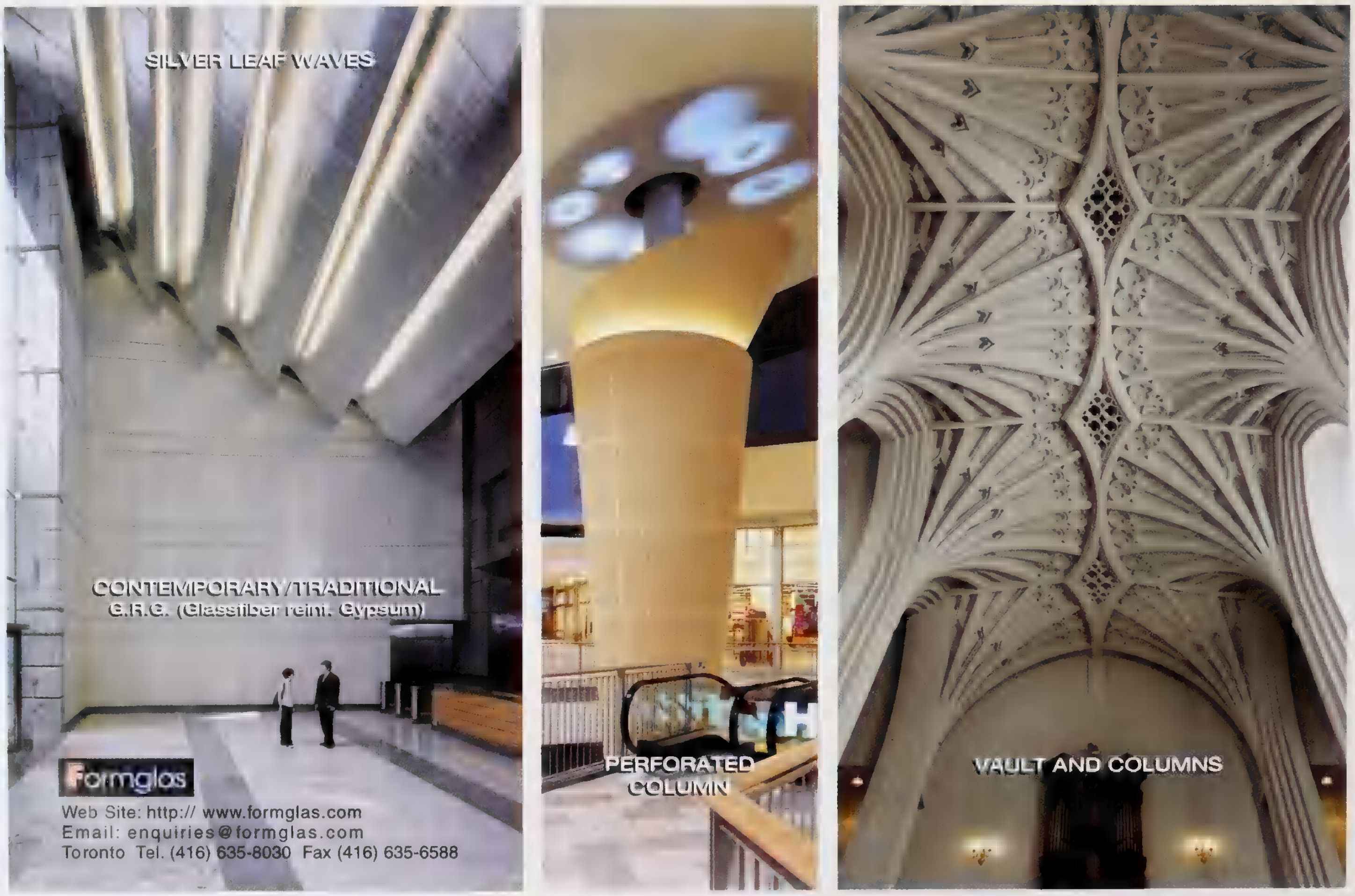
Vermonter Bob Burley is another architect who has worked on Taliesin. "There are very few places where construction is first rate," he says. "I think Wright would say that being able to carry out the idea physically and have people see it and enjoy it is more important than making a timeless monument. Maybe a little bit like Palladio: Let's get it up with plaster if we have to, to at least get the form. And of course he didn't have the money." Ten years ago, Burley led a team to analyze the building. He guessed then that it would take $20 to $30 million to fix it. He figures the number should be at least doubled today.

WE SHARE THE VALUES OF A PACK OF VANDALS, PRIZING COLLECTIBLE OBJECTS MORE THAN CREATIONS LIKE TALIESIN.

Too big to hang

But $60 million for Taliesin is chump change. A single Van Gogh can cost as much. We preserve with devotion our heritage of paintings and sculptures. Yet we let our masterpieces of architecture deteriorate. Taliesin East, taken as a whole, is a far greater work of art than any American painting. But in our culture we tend to share the values of a pack of vandals. We see collectible objects as more valuable than holistic creations like Taliesin. That's because Taliesin is too big to be acquired and hung on the wall of a museum or a living room as proof of wealth and taste.

It's not that nobody is doing anything. Taliesin is owned by the Frank Lloyd Wright Foundation, and the foundation is embarked on a capital campaign. Its president, Jim Goulka, grew up across the street from the Oak Park home and studi near Chicago. He's a businessman with an art history degree from Yale. At Yale, Goulka attended a Vincent Scully lecture where, he says, "the lights went off and he started talking and my world changed." Goulka and his board, with advice from the National Park Service and others, will make the decisions about Taliesin. A federal grant of $1,140,000 will help solve the subsurface drainage problem. But that's a small beginning. If you figure the whole estate, barns and school, windmill, farm, and all—and you should, because everything is part of the holistic vision of life that Wright created—you're talking about 100,000 square feet of building plus a lot of historic landscape. Not to mention the contents: works of art of every kind, carriages and sleds and skis, even Wright's old movie projectors, all of which help tell the story of the communal life



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Wright strove to create.

Two issues dominate the question of preservation. Issue One: How do you keep the sense of Taliesin as an improvisation? Taliesin was an act of creation as joyous and careless as a dance. It was an open-ended experiment, a place in a state of continual transformation and invention. Restore it too carefully, and you lose that sense. But just how does an architect walk that tightrope?

AFTER 1938, WRIGHT NO LONGER CONSIDERED TALIESIN EAST TO BE HIS PRIME PLACE OF EXPERIMENTATION.

Issue Two: To what date do you restore a building that never stopped changing? Nobody quite agrees. "Our reference date for the restoration is 1959," says Goulka. "It will be a restoration in the precise sense, to the Secretary of the Interior standards." John Eifler is less sure. "I think we're using 1959 as a guide, there's no question about that, but we are considering everything on an individual basis. We might elect to keep something that Olgivanna [Wright's third wife] did [after Wright's death], because you can't ignore her influence on these buildings." He points to the Oak Park house and studio as an example of a restoration that was perhaps too zealous. "They had a very rigid date for their restoration. In the process, they removed an entry vestibule that Wright did a little later on. So that you had real stuff getting removed for kind of ersatz stuff."

A third position is that of Neil Levine. He'd like to restore the house to about 1925, when he thinks it peaked. "Certainly before 1938," he says, the year he believes Wright's passion shifted to Taliesin West in Arizona. Levine thinks that after 1938, Wright "sort of trashed Taliesin East or, let's put it this way, he no longer considered it to be the prime place of experimentation."

These are questions that deserve a national debate. They shouldn't be resolved by a few inside players. A public exhibition could put them on the table.

A hometown favorite

A contrast to Taliesin is the fate of another indispensable Wright house, the Darwin Martin House, in Buffalo. Preservationists have acquired and demolished an apartment building that long occupied the site of the Martin's former carriage house. The carriage house is being rebuilt, together with the famous pergola that linked it to the main house. Is this preservation, or is it re-enactment? I don't know, but I'm glad it's happening.

Buffalo is my hometown and also Bob Burley's (he once worked on the top floor of Sullivan's Guaran Building, with the circular windows). Our city has seen tough times economically in recent years. One result is that Buffalo is prouder than ever of the treasures it still has, whether those are sports team or Wright houses, of which Buffalo possesses four. Buffalonians, who once tore down the Larkin Building, now see Wright as an emblem of past greatness and future potential. Taliesin lacks that kind of patriotic setting. It's up to the nation as a whole to become, for Taliesin, the constituency that Buffalo is for the Martin.

I won't try to describe Taliesin. Suffice it to say that there is no greater work of American art. A museum show would bring its greatness into the consciousness of a large public and would help to preserve it for the future. If we don't do those things, we might as well forget our pretensions to culture or civilization. ■

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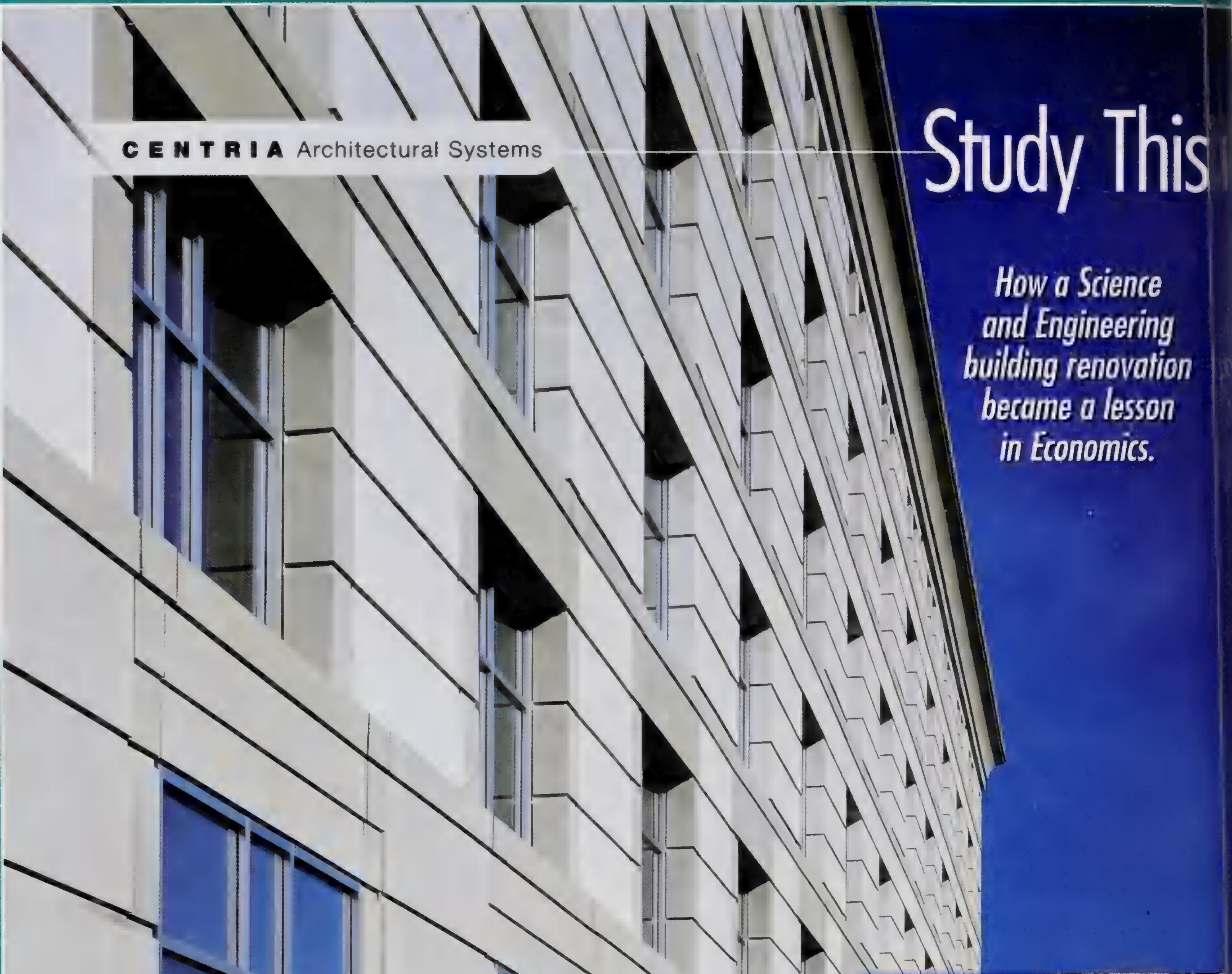
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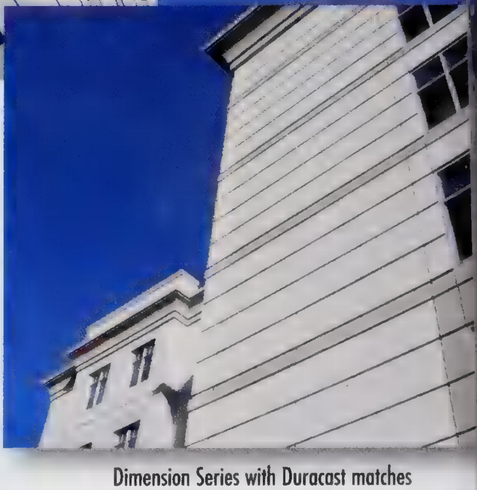

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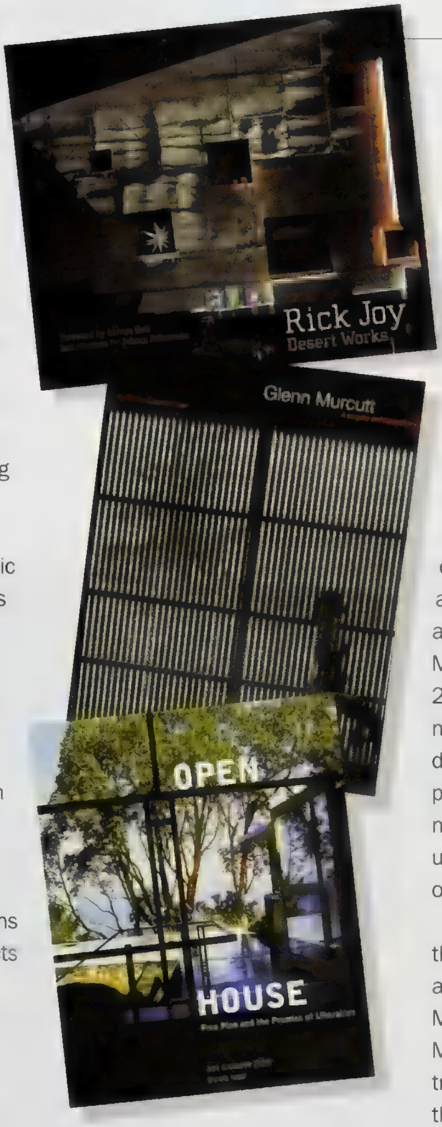
Home on the shelf: A roundup of titles on residential design

Books

Rick Joy: Desert Works, *by Rick Joy; introduction by Juhanni Paalasmaa. New York: Princeton Architectural Press, 2002, 176 pages, $40.*



How about this version of the American dream: a house by Rick Joy in Arizona's gorgeous Sonoran Desert as simple yet emotionally intense as the desert itself?

Joy, who spent 12 years as a musician and carpenter before going to architecture school, says, "As a drummer I was always more interested in the ways to make the music 'feel' a certain way than in attempts to be flashy. As with the music of Miles Davis—the silence is often more profound than the sound." Paalasmaa writes in a heartfelt introduction that Joy's work seems "informed by a wisdom derived from vernacular and historical buildings as well as the entire heritage of modernity." Joy has little patience with isms or architectural pretensions and is unusual for tackling all aspects of construction as well as design. His firm builds primarily with teams of recent architecture graduates.

The book's nine houses are accompanied by quietly beautiful photographs, most of them by Bill Timmerman, and by short descriptions written by Joy. Often the author provides more feeling than formal description. About Tucson's Catalina House (1998), for instance, he writes: "The house's gaze is transfixed on the view of the dramatic Catalina Mountain Range to the northeast—a given. Three forms, arranged in defiant stance like a wagon train, camp around a fragile complex of saguaro cactuses, mesquite trees, and burrowing fauna ..." It reminds you of what he said about drumming. The text may not have enough detail for some architects, but what it lacks in specifics it makes up for in its corresponding lack of archispeak. As with his architecture, Joy's writing is eloquent in the absence of pretense. *Andrea Oppenheimer Dean*

Glenn Murcutt: A Singular Architectural Practice, *by Haig Beck and Jackie Cooper. Melbourne: Images, 2002, 255 pages, $65.*

In their lively journal, *UME*, Australians Haig Beck and Jackie Cooper have developed an intimate way to discuss a work of architecture by recreating architects' explorations. Using sketches, diagrams, and working drawings, the result of mind-eye-hand connections, they provide evidence of an architect's ideas and values. Applying this lens, Beck and Cooper's new book about Murcutt provides a fresh look at the 2002 Pritzker Prize winner's work, most of it houses. Here, numerous drawings combine with excellent photographs and revealing commentary to uncover insights not usually revealed in more historically oriented monographs on Murcutt.

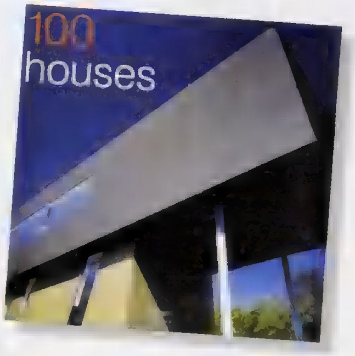
The book is organized into three sections: theory, practice, and technique. In the first section, Murcutt, Beck, and Cooper clarify Murcutt's work as a rationalist, trace his hallmark linear plans back through Le Corbusier and Wright to the vernacular, and look at Murcutt's working process through drawings for the unbuilt Broken Hills Museum. Murcutt talks about being inspired by the poetics of utilitarian architecture, reflects on his frustration with the loss of a fundamental connection between building and site in architectural education, and—in a discussion of detail and product choices—demonstrates his enthusiasm for the making of buildings. The essay concludes, "Eliminate complexity. Minimize the number of joints. Keep it simple."

In the practice section, chronological presentations of 23 projects, completed over 30 years, are accompanied by commentary by both authors and Murcutt and give an overview of the architect's work to date. This feast of drawings and photographs leaves us wanting more, a desire partly satisfied in the section on technique by a wordless collection of design-development and working drawings for the 23 projects. The legendary Murcutt sectional drawings are particularly engaging. With characteristic economy of means, the entire drawing is densely notated on one sheet, demonstrating the way systems of foundation, floor, wall, and roof all relate to one another. Unfortunately, publishing decisions compromised the legibility of many drawings.

Beck and Cooper are advocates for Minimalism's ability to empty out symbolism in favor of unadorned tectonic clarity. However, they also continue Colin St. John Wilson's exploration of the "other tradition of Modernism," in which the particulars of climate, landscape, and available materials give Minimalism a poetics of inhabitation. Murcutt's work falls into this category but goes further. The Glenn Murcutt we get to know here is a moral rationalist who frames his design decisions in terms of his client, the site, and life-cycle material, labor, and environmental costs. His drawings show an endless willingness to explore and a rigor and precision of detailing that pushes his work beyond the poetic and into the sublime. The drawings in this book reveal, quite simply, a man who loves building—and who inspires us to do the same. *Lisa Findley*

Open House: Unbound Space and the Modern Dwelling, *by Adi Shamir Zion. New York: Rizzoli, 2002, 224 pages, $75.*

Open House stands out from the recent flood of books about contemporary houses because of Adi Shamir Zion's provocative writing, which is enhanced by Dung Ngo's crisp, intelligent design. The first half of the book uses essays, supported by quotes, photographs, and plans, to trace the idea of openness in house design from the free plan to the endless house and beyond. In the more conventional second part, Ngo and Shamir Zion present 12 contemporary house projects by UN Studio, Glenn Murcutt, LOT/EK, and others through photographs, drawings, and a brief text.

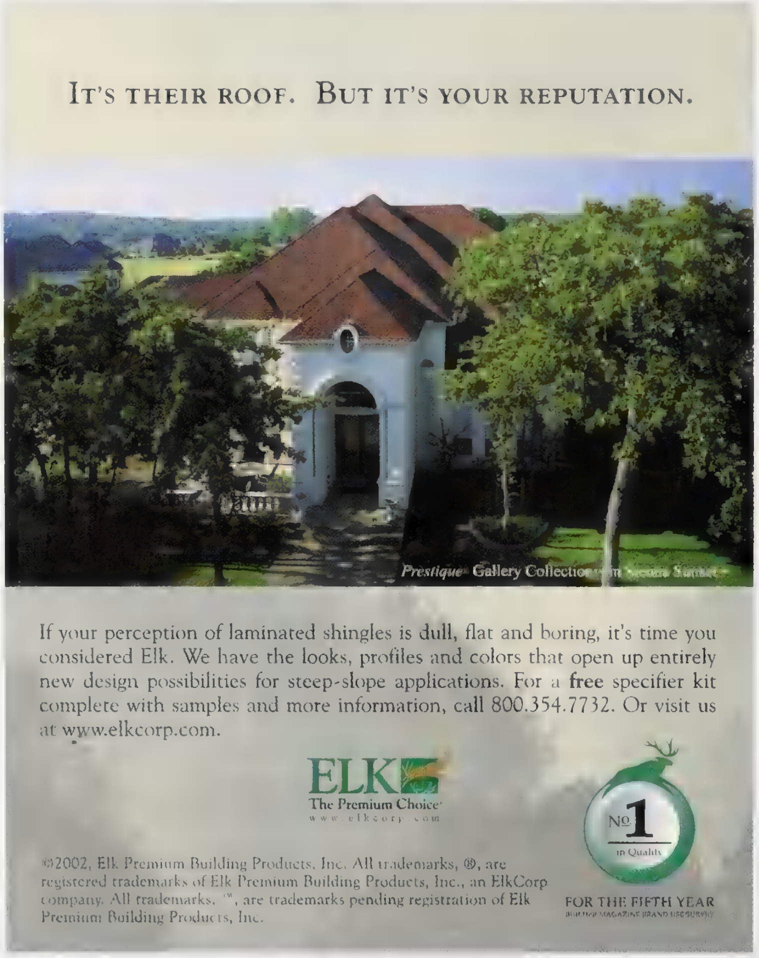


In her lively essays, Shamir Zion argues that openness comes from one of three basic qualities or intentions: liberation, universality, and continuity. She traces the evolution of each from its early Modernist roots to today. Braided into the discussion are explorations of openness in art, film, dance, and literature, together with breakthroughs involving openness in psychology and physics, new building technology, and changes in urban, economic, cultural, and family structure. The essays range widely, tracking influences, disagreements, responses to criticism, and experiments that succeeded as well as others that failed. As a result, they are idiosyncratic and speculative in the best sense. They remind us of the less-well-known open house designs of Oscar Niemeyer, of Brazil, and José Antonio Coderch, of Spain. They cause us to wonder what visionaries like Buckminster Fuller and Frederick Kiesler would have done with access to today's digital and material technology, or why Schindler, Neutra, and Eichler did not have a more significant impact on suburban housing in California. And they purposely leave us without a conclusion, making clear that the exploration of unbound space is still very much a subject for architects to debate and push forward.

The design of the first half of the book moves beyond illustration to collaborate with the text. Sidebar quotes pull the reader out of the flow of the text—suggesting that reading as well might become more open. Pale plans float behind text toward the edge of the page, suggesting depth and a space beyond the book. Photographs also flirt with the edge, some bleeding off the page, others clearly bounded by white space.

The projects in the second part range widely. Building on their historic predecessors, some attempt to liberate space, others to make it more universal or continuous. Full-page photographs are carefully selected to support ideas of openness, so that taken together the projects provide a kind of catalog of design strategies for unbinding space. It is no accident that this beautiful book opens the reader's thinking about the nature of openness in architecture. *Lisa Findley*

100 of the World's Best Houses, *Introduction by Catherine Slesser. Melbourne: Images, 2002, 360 pages, $60.*



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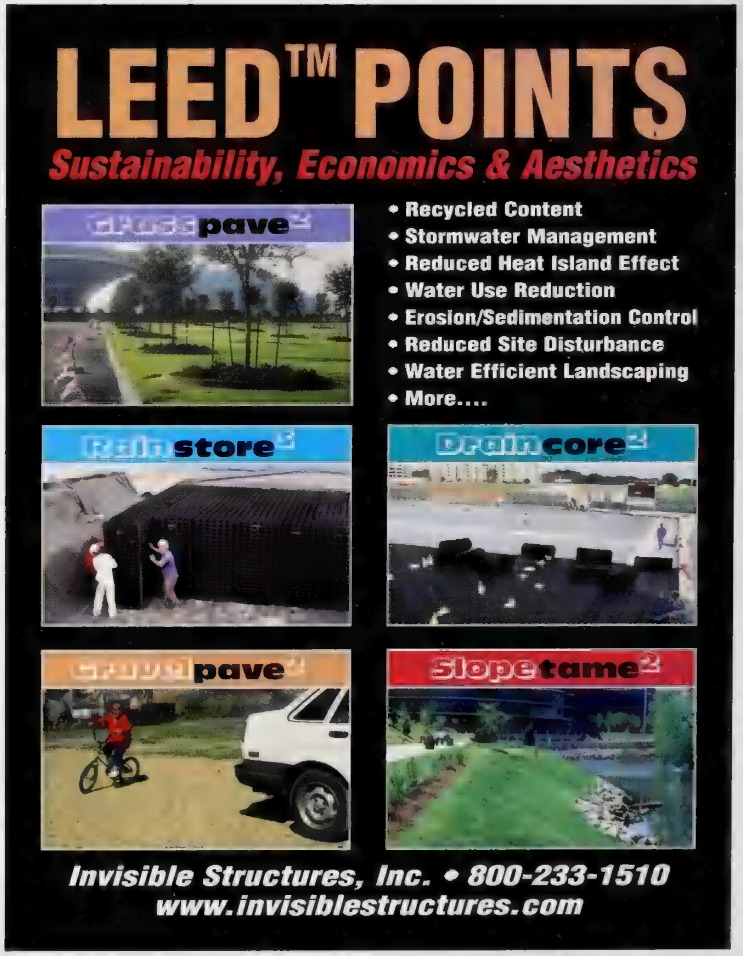

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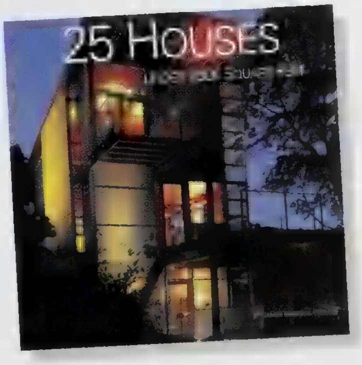
If you're looking for a picture tour, unsullied by many words or ideas, of contemporary houses from around the world, this book's for you. Actually, the images, captions, and short introduction pretty much tell the story: It is that social and technological influences are changing house design. Today, residential design must accommodate a variety of household types, including multigenerational families, singles, and cooperative groups. New house design is expected to reflect trends such as working at home and green awareness. And, the author tells us, in response to new technical and materials developments, some houses have become "wired worlds."

She acknowledges, however, that the basic house program hasn't changed much, and the very simplicity of the dwelling "makes it perhaps the only building type for which an architect can exercise complete design control and establish a genuinely intimate client relationship, free from the inhibiting influence of developers, cost managers, and bureaucrats." As a result, there is great variety among the authors' 100 of the world's best. *AOD*

25 Houses Under 2500 Square Feet, *by James Grayson Trulove. New York: Harper Design, 2002, 272 pages, $40 (paper).*

While too many Americans dream of supersized McMansions, this book shows small can be beautiful. The book itself, though, is bigger than average (1 foot square) and offers generous coverage (up to 14 pages) of each of its featured houses. The collection ranges from a 640-square-foot live-work studio in Los Angeles by Dry Design to a 2,500-square-foot house in Seattle by Olson Sundberg Kundig Allen Architects. Along the way, it includes work by Rick Joy, Stan Allen, Mack Scogin and Merrill Elam, Obie Bowman, Turner Brooks, and Bohlin Cywinski Jackson. All of the houses are American, except for one by Gabriel Poole in Australia and one by Jacques Moussafir in France. *Clifford A. Pearson*



House: American Houses for the New Century, *by Cathy Lang Ho and Raul A. Barreneche. New York: Universe, 2001, 224 pages, $55.*

The 20 North American houses shown in *House* were chosen to illuminate changing ideas that are shaping the American dream. The authors say they had difficulty finding houses that fit the bill.

The book's first section showcases designs that push materials and building techniques to new expressions. The residences in the second section take their cues from their sites and impact them as little as possible—ideas aligned not with high Modernism but with environmentalism and social responsibility. The book's final segment is erroneously called "Revolutions." Indeed, the authors say they "are not so much suggesting that the architecture in this chapter is revolutionary, as much as we are saying that it creatively responds to the rapidly changing demands, functions, and conceptions of the contemporary house." Ho and Barreneche showcase three multigenerational dwellings, among them Steven Holl's Y-House, a tree house by Marlon Blackwell, and a house by Kennedy & Violich containing a home office, gallery, and lap pool.

None of the solutions shown in *House* are revolutionary or mind-popping, a point reinforced by the authors' conclusion that the "the most significant revolution in domestic space in the late 20th century" is the residential loft. *AOD*

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Diller + Scofidio challenge assumptions in first major American exhibition

Exhibitions

By John E. Czarnecki, Assoc. AIA

Scanning: The Aberrant Architectures of Diller + Scofidio. *Curated by Aaron Betsky and K. Michael Hays; designed by Diller + Scofidio. At the Whitney Museum of American Art, New York City, through May 25, 2003.*

Challenging assumptions underlying the design of physical space, place, and objects, and their meaning, New York architects Elizabeth Diller and Ricardo Scofidio, in their first major American museum show, lure museumgoers into a commentary on contemporary society. With an exhibition comprising a divergent collection of work that is both witty and engaging, Diller and Scofidio demonstrate that the creation of beauty and order is superficial without an understanding of the world around us.

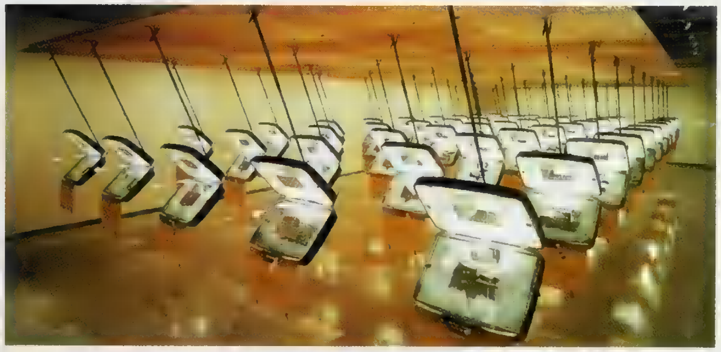
Scanning: The Aberrant Architectures of Diller + Scofidio, at the Whitney Museum of American Art, is more about art and design than about the design of buildings. The husband-and-wife team, who have collaborated for more than two decades on art and architecture projects, is fast emerging from the New York avant-garde and academia to gain national attention and major commissions, including the landscape design for the planned Lincoln Center renovation in New York (see page 46).

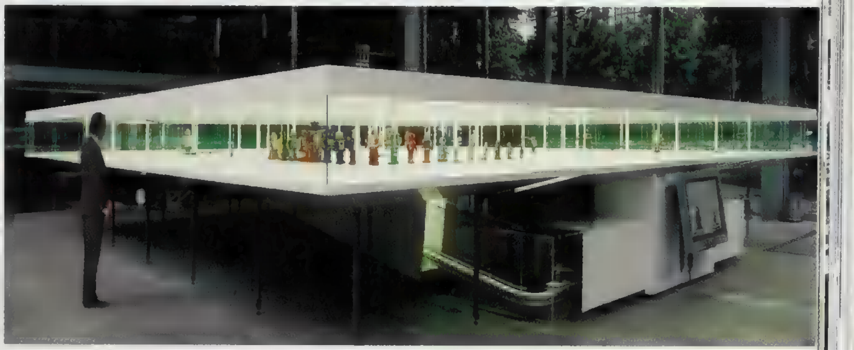
Other conceptual artists have explored material and concepts similar to Diller + Scofidio's: the experience of objects and environments, display, ritual, inside versus outside, transparency versus opacity, and public versus private—but it is important to see architects take on these themes on a large scale. Diller + Scofidio challenge the assumed territorial nature of physical space, encouraging other architects and designers to question, and ultimately to make richer places. The show includes video installations, design for buildings and interiors, temporary museum installations, theater design, public art, toy robots, and a drill.

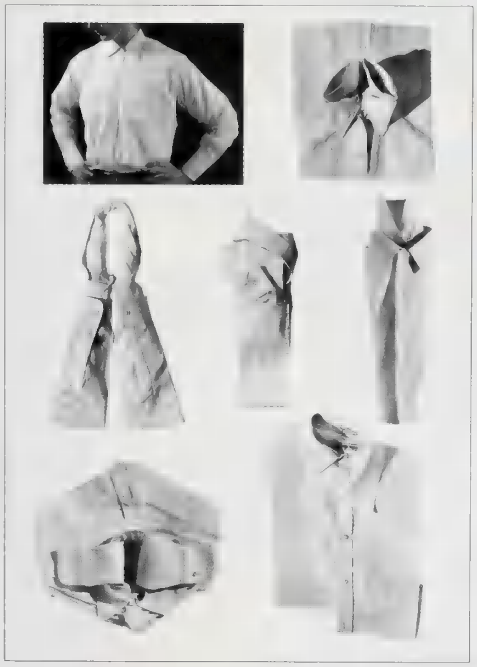
As visitors arrive on the Whitney's fourth floor, they may hear the drill piercing the exhibition's walls. Suspended from a track running 320 linear feet along the walls, the computer-controlled tool, with a half-inch drill bit, slowly moves along the track until it reaches a random point, where it punctures a hole both in the wall surface and in the silence of the space. Called *Mural*, this portion of the exhibition calls attention to the white walls—usually neutral supports for art that are not noticed as objects in themselves. By the end of the exhibition, a number of holes will have perforated the walls and interrupted their continuity.

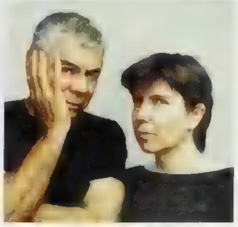
Another wall intervention, *Uncovered*, is more subtle, but striking upon closer inspection: The architects have inserted an original gypsum-board wall from the Museum of Modern Art (now closed for an extensive renovation and expansion) into the exhibition wall at the Whitney. The differences in texture and shade of white paint, with markings where art used to hang, force the viewer to contemplate the wall segment's place, function, and history.

Another installation, *Bad*









The exhibition of the work of Ricardo Scofidio and Elizabeth Diller (above) includes the installation *Tourisms: suitCase Studies* (top); *Master/Slave* (second from top), with toy robots on a track; and the aberrant creases of *Bad Press: Dissident Housework Series* (left).

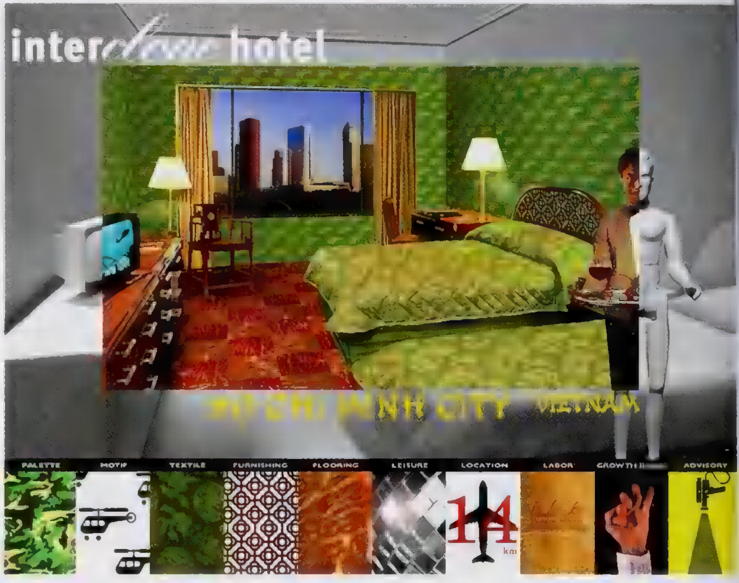
Exhibitions

Press: Dissident Housework Series, showing shirts that are pressed and folded into imperfect and irregular forms, questions the aesthetics of efficiency, refinement, and cleanliness that we take for granted.

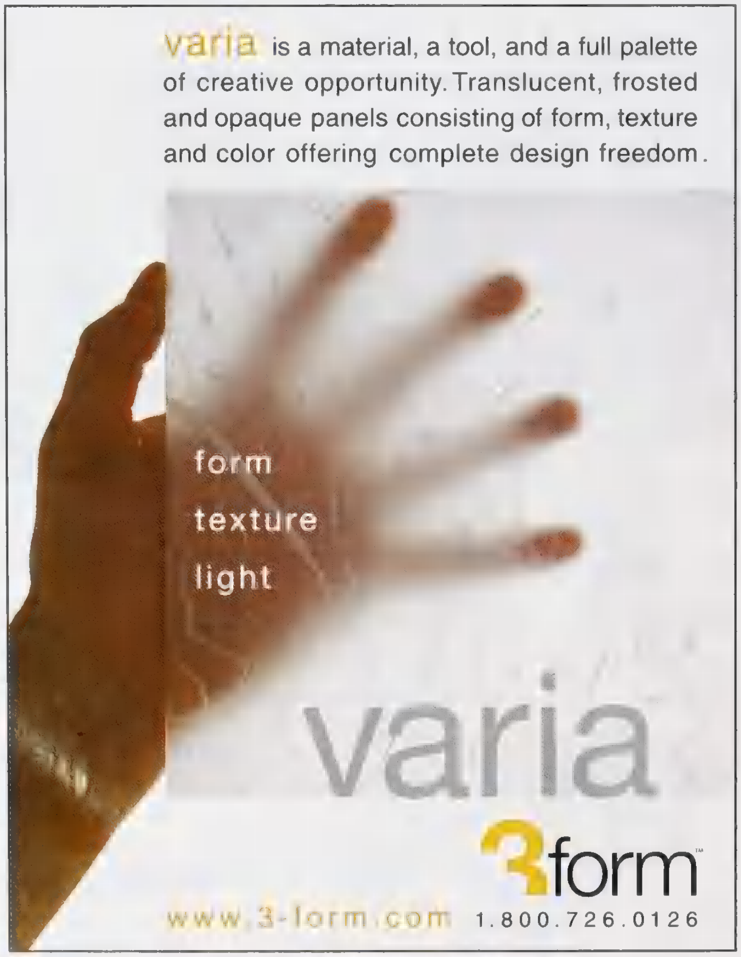
Diller + Scofidio's wry sense of humor mixed with social commentary is apparent in both *Master/Slave* and *Tourisms: suitCase Studies*. *Master/Slave* features toy robots—from the collections of Rolf Fehlbaum and Fifo Stricker—along a conveyor belt in a large steel and glass vitrine. The robots move, one by one, along the belt into an X-ray scanner and past surveillance cameras mimicking the way people pass through airports. *Tourisms: suitCase Studies*, with 50 suitcases that each have a postcard and text from one of 50 tourist attractions in the U.S., examines the issue of authenticity in place-making.

Models and drawings of the firm's architectural projects seem in aggregate more like an aside to the other installations. A large-screen video of the Blur Building shows the museumgoer what a walk through the steam-filled structure is like. However, the drawings and models of buildings on the boards, like the Institute of Contemporary Art, in Boston, and Eyebeam Atelier, in New York, although beautifully designed projects, do not have the same impact or offer the ironic commentary of other portions of the show.

With *Intercone Hotel*, an ad campaign for an invented hotel chain, Diller + Scofidio present a critique of the role of architecture in contemporary life. While the information and hotel decor vary for six cities, the room itself and the skyline views change very little—a formula of sameness intended to confer comfort. ■



Images, video, and drawings of the Blur Building (top), completed last year in Switzerland, are included in the exhibition. *InterClone Hotel* (above) is an ad campaign for an invented hotel chain in cities with emerging economies.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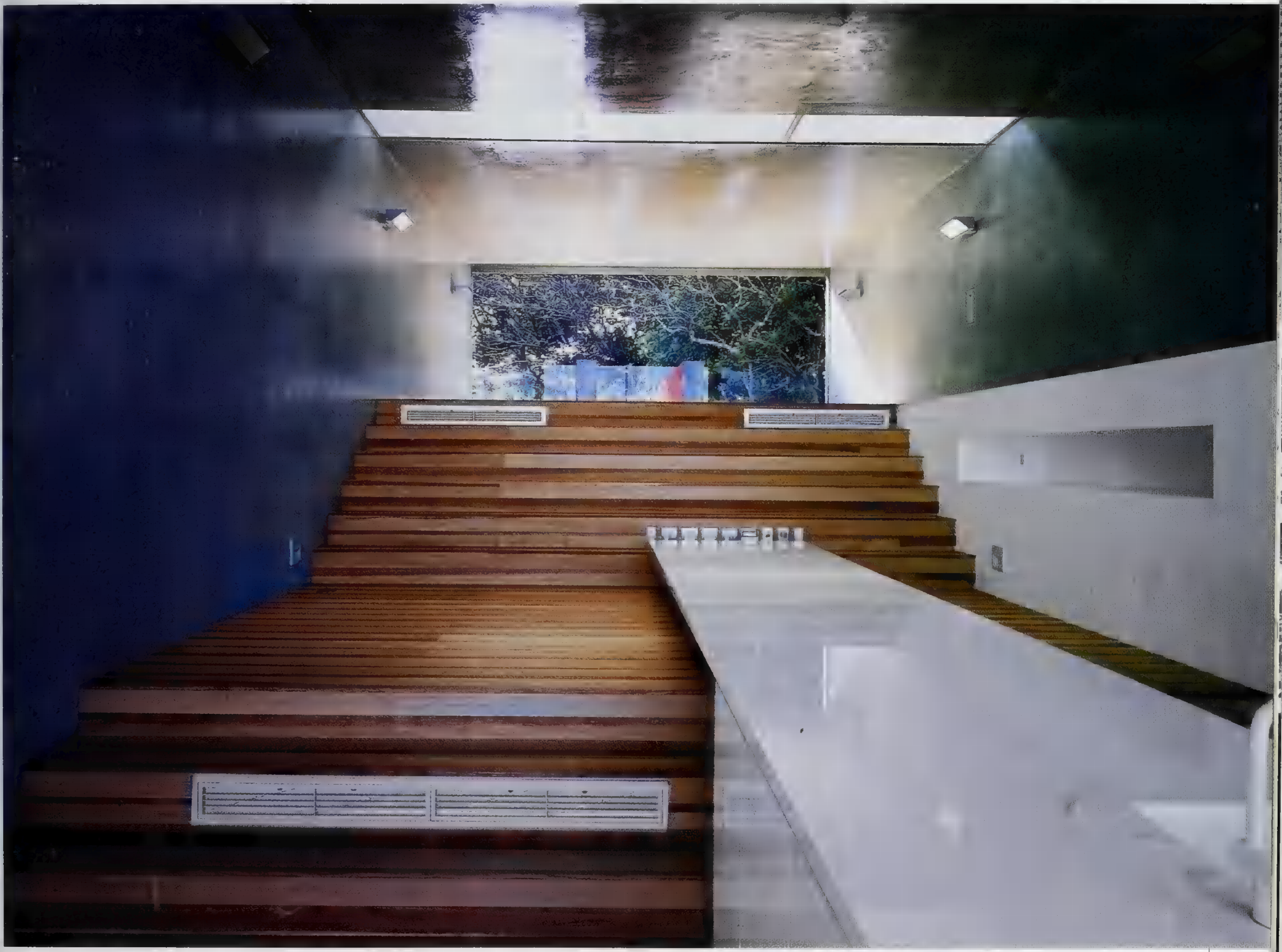
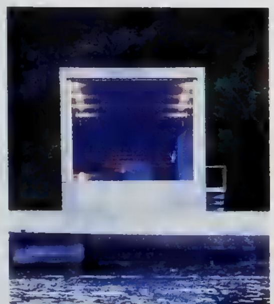
imagination at work



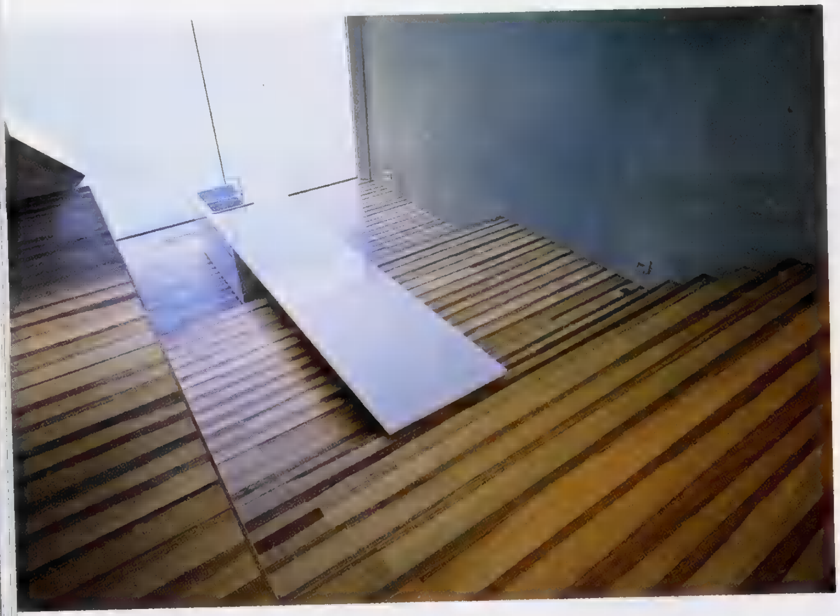
By Naomi Pollock

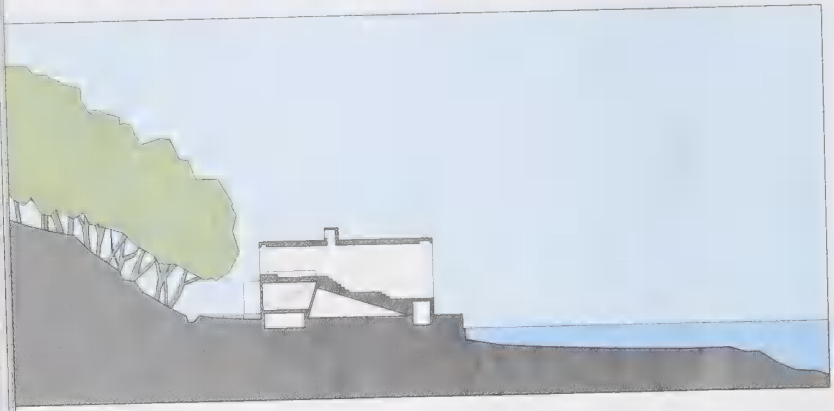
A sloping Japanese guesthouse is all about the bay

All work and no play is no fun. But visitors to the Nigaki Chemical Company on the island of Kyushu, Japan, haven't had to worry about that since the business completed its guesthouse. Instead, they can look forward to being wined and dined while gazing out at scenic Saeki Bay. To accommodate the steady stream of colleagues making the 6-hour trek down from Tokyo and Osaka, the company owner wanted an entertainment space adjacent to his factory. In hiring Oita City architect Takao Shiotsuka, he also got a whole new way to experience the sea.



Considering that he's been looking at Saeki Bay all his life, this was no mean feat. But Shiotsuka pulled it off with a simple, rectangular concrete box designed to fit in with the company's industrial buildings. Enclosed by huge glass panels at either end, the 734-square-foot structure backs onto a hilly forest. In front, the water practi-



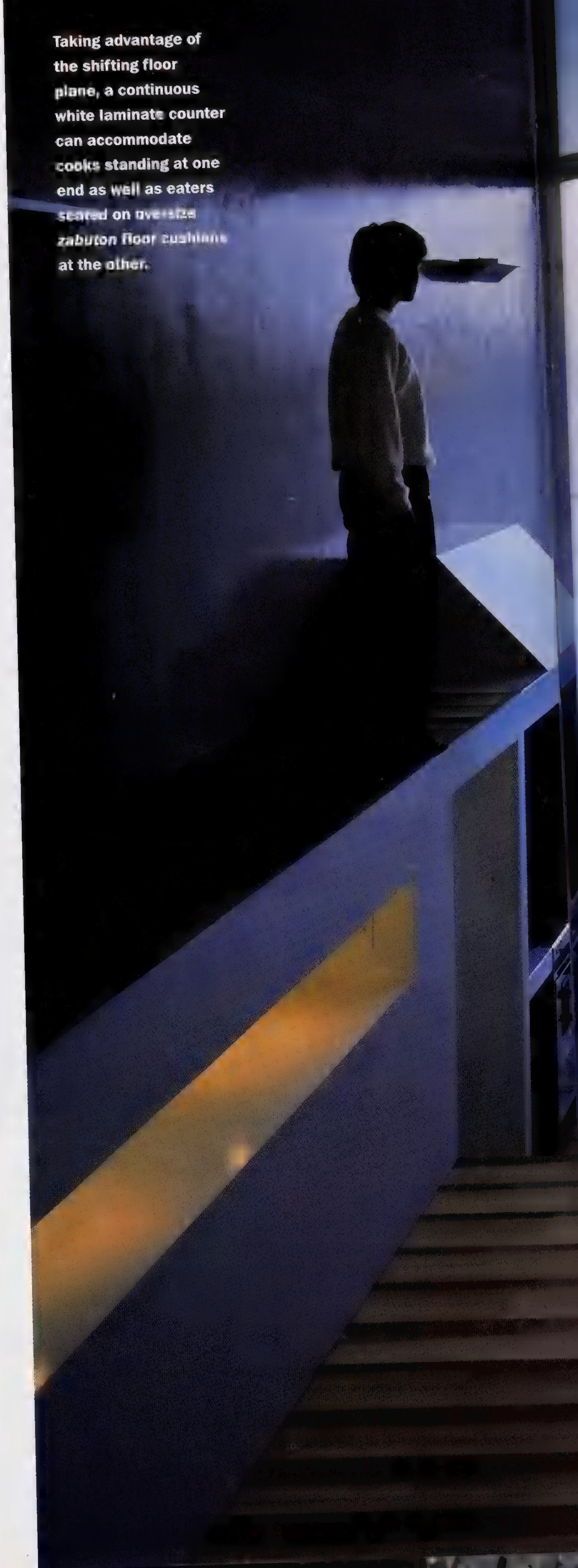


cally laps at its feet. Tinted black, the glass panels do not reveal the interior, but on the long elevations, a large triangular cutout of the building's base begins to reveal the main space's topography.

From the building's entry at the rear, stairs lead directly up to the main room's upper level. Here, the entire waxed-pine floor begins a stepped descent that pauses midway at a landing big enough to accommodate a dining area for six, and culminates in an open food-preparation area with plenty of room for guests to mill about. Each spot has a different vantage point to the sea. As the floor drops, the visible sky-to-water ratio changes, and the water draws closer until, says Shiotsuka, "it feels as if you're riding and shaking on a ship."

Like a camera lens, the window's 13-by-16-foot sheet of heat-absorbing glass focuses attention on the water but filters out more than unwanted rays. "If the exposure to the ocean is too direct, the smell and wind can be too strong," says Shiotsuka. Editing out these sensory elements intensifies the water's visual impact: All day long the waves' changing shadows and colors wash up on the building's glossy interior walls. After watching the water, it is possible to plunge in—albeit into the sanitized setting of the Japanese bath downstairs, where glass doors fuse the spa area with a private terrace facing the wooded hillside.

This building is not a guesthouse in the truest sense of the term. "It is not possible to sleep here unless you bring your own sleeping bag," chuckles Shiotsuka. Even so, it's still quite the haven for sybaritic pursuits. ■



Taking advantage of the shifting floor plane, a continuous white laminate counter can accommodate cooks standing at one end as well as eaters seated on oversize *zabuton* floor cushions at the other.

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The owners of Stock Brook Manor, a championship golf course, wanted to extend the swim-season year-round by enclosing their newly renovated pool. The challenge was to find a quality design solution that would attractively complement the existing architecture as well as be simple to use and require little maintenance.

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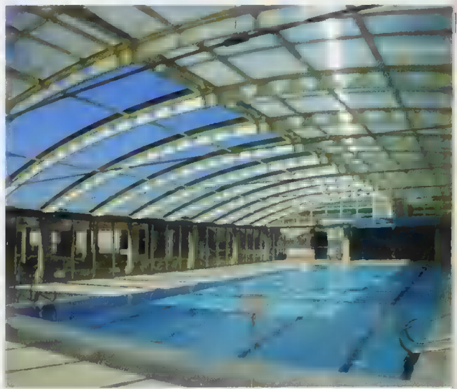
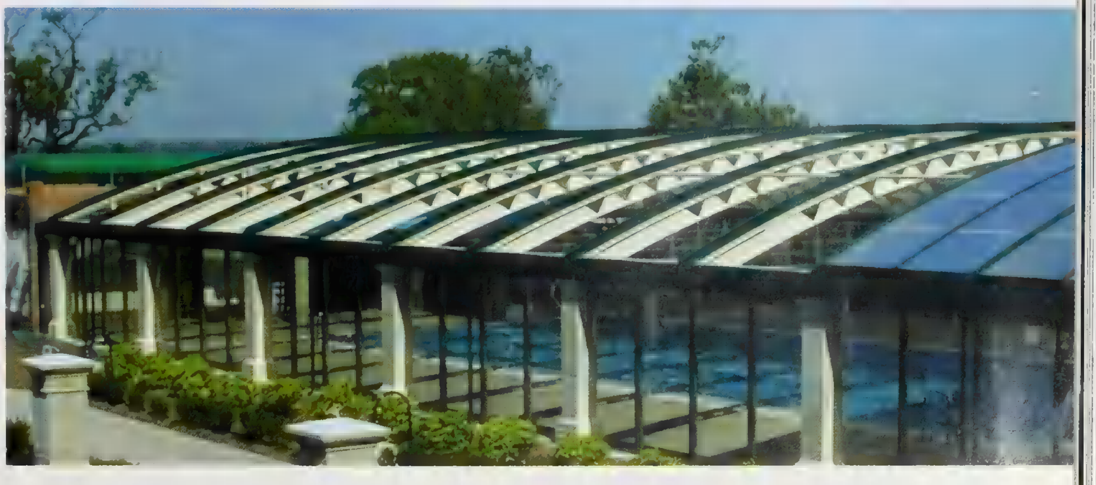
The concave roof opens 50% as the entire south roof length retracts over the entire north roof length. To reduce thrust on the existing steel, **OpenAire** used stainless steel collar ties at each rafter (except gable & rafters). Stock Brook owners are very pleased – the pool area features an unusual retractable roof that opens up when desired and Manor guests, whether they are swimming or just relaxing on the terrace, delight in the additional natural light and fresh air.





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24 operable roof panels.

Mr. Sheldon Aaron, President of Lamplighter Inn set out to create a place where visitors could experience sunshine, palm trees, pools, a waterfall and much more at any time of the year. The resulting enclosed courtyard features a retractable polycarbonate roof that spans over 100 feet and stretches over 220 feet in length. By utilizing an OpenAire skylight Mr. Aaron was able to create his tropical paradise and make it accessible in winter or summer, a remarkable achievement in Ontario, Canada."

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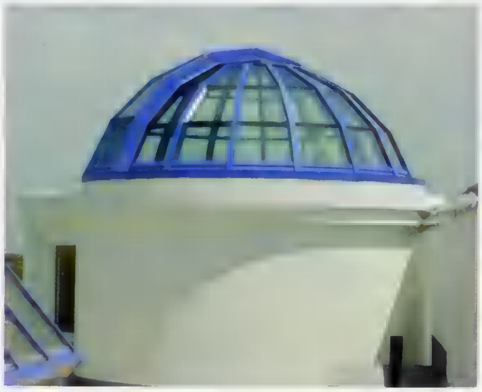
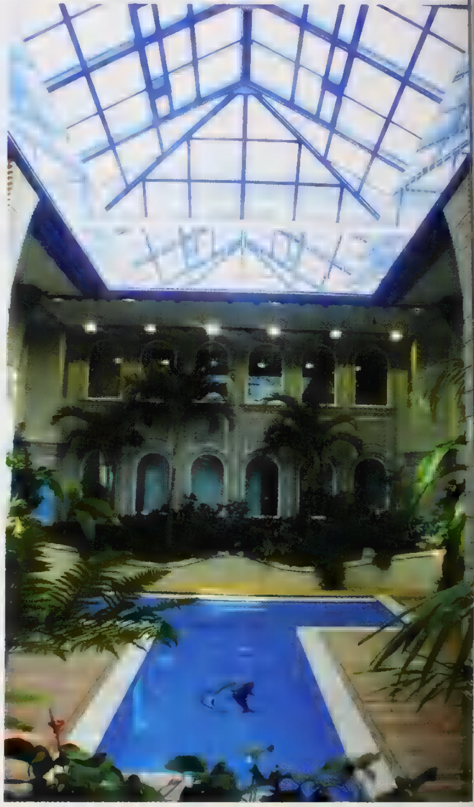


A lush, tropical pool area that was all about light, space and elegance – that's what the owner wanted. **OpenAire** gave architectural expression to the project by designing several skylights, one of which is an operable skylight situated directly over the pool. At the touch of a button, the panels retract to let in sunshine and fresh air. The skylight installation also includes electronic rain sensors and an HVAC interface system that addresses the climate control required to maintain a humid environment for tropical plants. **OpenAire** also designed and installed a dome that can open up to 50% of its area. One half of the structure rotates into the other half. Th entire assembly can also be rotated 36 degrees to allow viewing in any direction.



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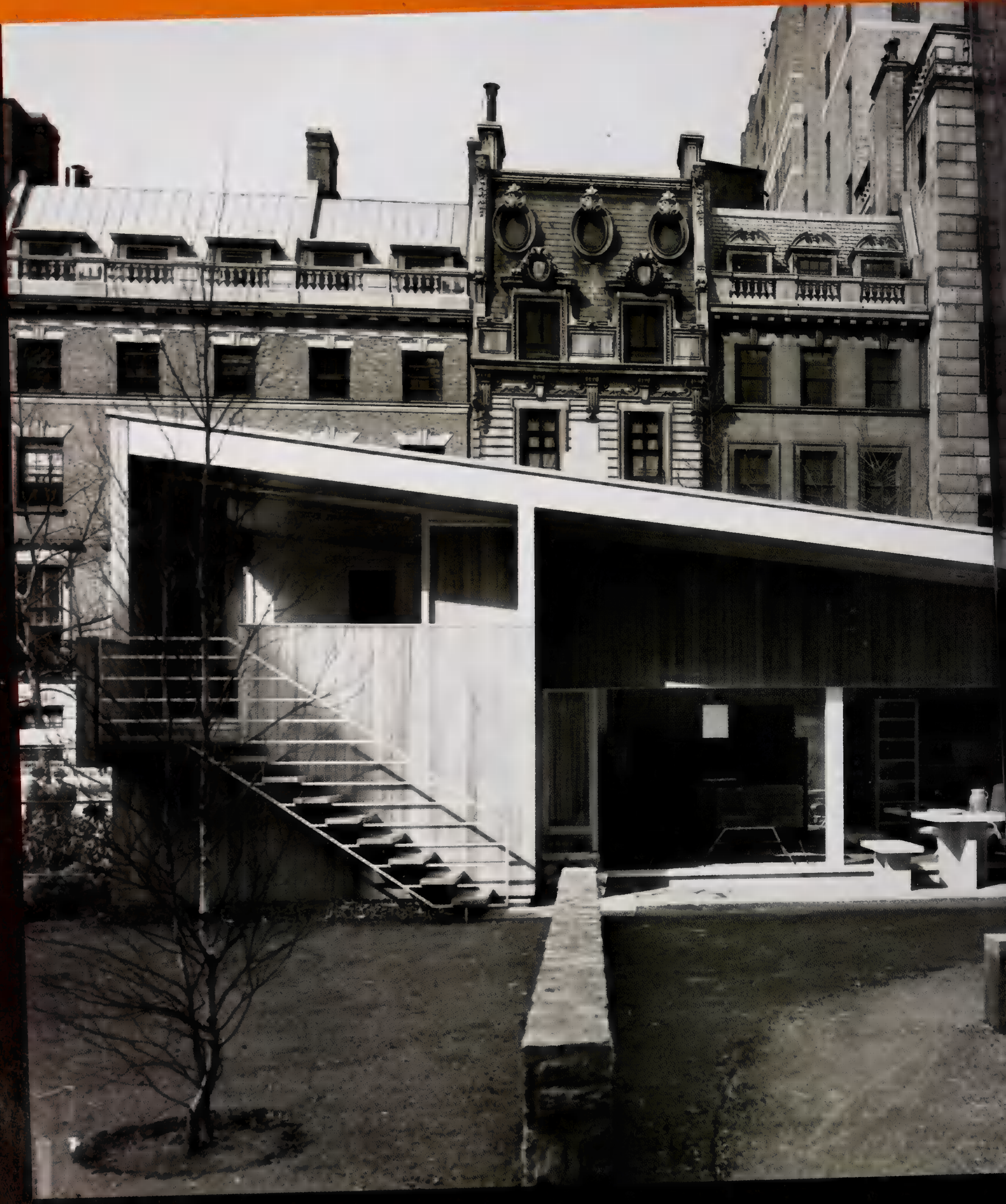


Demonstration houses proliferate: Marcel Breuer's design at MoMA, 1949 (below); the Stahl (Case Study) House by Pierre Koenig, 1960, in L.A. (right).

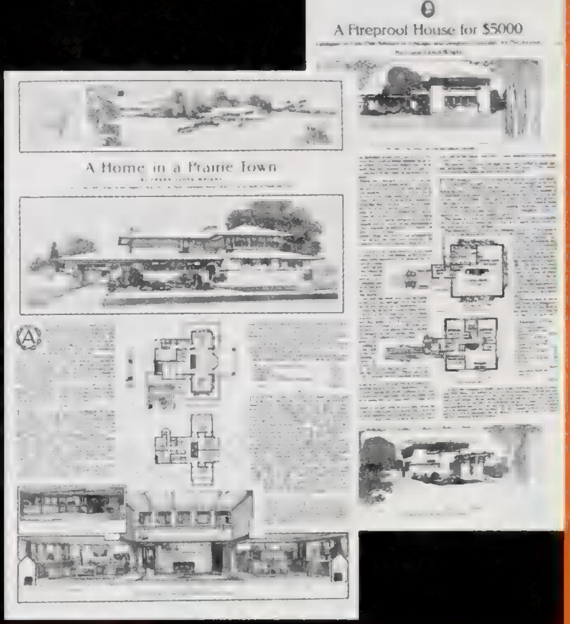
PHOTOGRAPHY: © EZRA STOLLER/ESTO (LEFT SPREAD); JULIUS SHULMAN (TOP)

The Promise of the Prototype

by Thomas Mellins

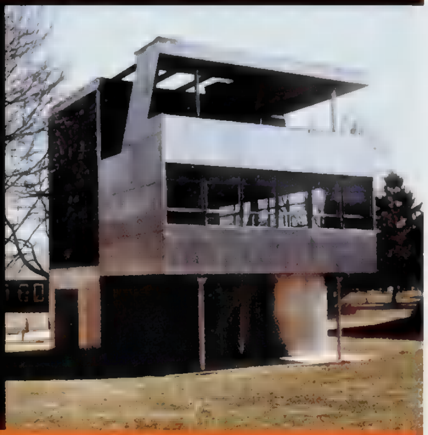
Despite the enduring power of the single-family, freestanding American house, neatly equipped with gables and shutters and redolent with reassuring associations of peaceful family life, the desire to push the envelopes of style and technology also has a rich history. Throughout much of the 20th century, museums, magazines, and expositions sponsored the design and construction of stylistically inventive case-study houses. Intended as teaching tools for introducing Americans to Modernism, they were also meant to create reproducible prototypes. The hope was to make real (and affordable) a more daring dream of domesticity.

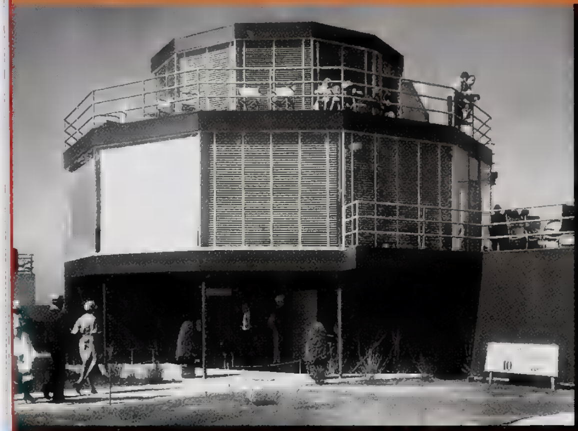
Thomas Mellins is a RECORD *contributing editor and Web curator for the National Building Museum's* Building America *site.*

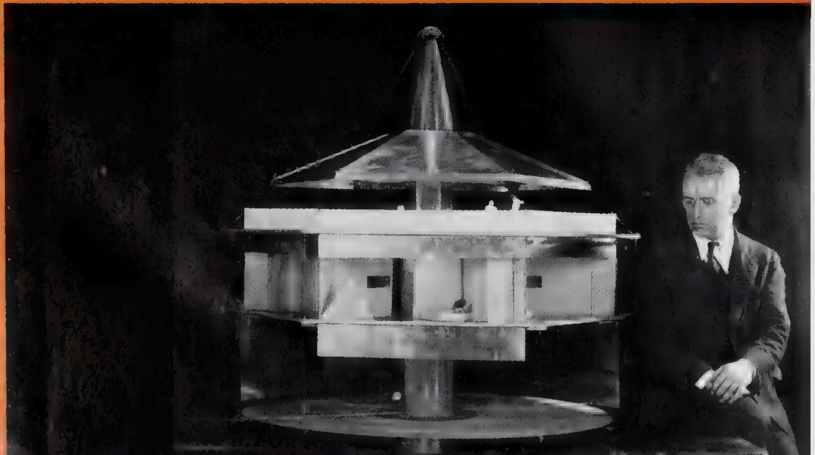

A Fireproof House for $5000

A Home in a Prairie Town

Frank Lloyd Wright's houses in *Ladies' Home Journal*, 1901 and 1906 (above). Kocher and Frey's Aluminaire House, 1931 (right), is being reconstructed. George Fred Keck's "House of Tomorrow" (below), at Century of Progress Exposition, Chicago, 1933. Buckminster Fuller (bottom) with a Dymaxion house in 1932.







The goal of bringing innovative, affordable houses to the mass market has never been fully achieved in the U.S. Indeed, demonstration houses have varied widely in their ability to influence mainstream taste or building patterns. Nevertheless, the houses collectively constitute a veritable textbook of Modern architecture's evolution in America. Underlying all of them has been a common conviction that abandoning the familiar can have real rewards. This is pretty heady stuff at a time when so many seem bent on disguising contemporary technologies—and lifestyles—in faux-Georgian or -Mediterranean McMansions.

Though some of the last century's experimental houses may strike us as impractical, or even downright wacky, it is hard to deny how contemporary and cutting edge some of these historic houses look today.

A mass-circulation magazine, *Ladies' Home Journal*, took the pioneering step in 1900 of sponsoring a series of designs for moderately priced suburban houses. Frank Lloyd Wright designed three of them. The stylistically progressive and ingeniously constructed houses clearly suggested that popular historical styles derived from European precedents would soon be rejected for an architecture shaped by the American landscape and national character. Here, Wright seemed to suggest, were truly American houses, finally free from a lingering sense of colonial inferiority.

THE HOUSES IMPLIED FREEDOM FROM COLONIAL INFERIORITY.

The "future American country house" received a new impetus from ARCHITECTURAL RECORD when the magazine published a prototype design by Swiss-born Modernist architect William Lescaze in 1928. The International Style scheme, complete with concrete walls, exposed heating pipes (no fireplaces), and rooftop meteorological equipment, eschewed familiar settings for hearthside family life. It vividly embodied the idea of the house as "a machine for living."

House construction came to a near standstill during the Great Depression, but experimentation flourished. The Aluminaire House, designed by Alfred Frey and A. Lawrence Kocher (then RECORD's managing editor) and touted as the world's first all aluminum and steel house, was constructed as part of the Architectural League of New York's annual exhibition in 1931. Lambasted by some critics as looking commercial, the boxy composition seemed to push the limits of a recognizable domesticity too far to be influential.

But the concept of metal houses grabbed the imagination of other architects. When the Century of Progress Exposition in Chicago displayed 13 model houses sponsored by private companies and business associations in 1933, the standout was a three-story, 12-sided, glass-and-steel house designed by George Fred Keck. His "House of Tomorrow" featured a passive solar heating system, central air-conditioning (and inoperable windows), as well as a ground-level hangar for the owner's biplane. In a two-year period, more than 1,250,000 people visited the building. Keck went on to establish a successful architectural firm with his brother William, and though its output incorporated some of the advanced technological features of the House of Tomorrow, it lacked the

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In 1958, Buff, Straub and Hensman designed the Bass House (top), a Case Study House in Altadena, Calif. Frank Lloyd Wright's Usonian exhibition house (middle) was on display in New York City in 1953. Pierre Koenig completed a Case Study House in West Hollywood, 1958 (right).

demonstration house's frankly futuristic look.

Between 1928 and 1946, the visionary architect Buckminster Fuller experimented with a variety of industrially produced shelters, all called Dymaxion houses. He designed the structures to be low cost, lightweight, easily transportable, and mass-producible. In 1941, the Museum of Modern Art (MoMA) in New York City erected one of Fuller's Dymaxion Deployment Units in its sculpture garden. Five years later, another Dymaxion structure, known as the Wichita House, attracted strong consumer demand, but the project ran aground after Fuller suspected his business associates of shady dealings.

By the time John Entenza, the visionary editor of *Arts & Architecture*, initiated the magazine's Case Study House program in 1945, a young generation of practitioners, deeply committed to architecture as a manifestation of reformist public policy, was eager to show that innovative design could be enjoyed by Everyman. The widely publicized program made stars of Pierre Koenig, FAIA, Craig Ellwood, Charles and Ray Eames, and the photographer Julius Shulman. It also helped to make sliding glass doors and flat roofs widely accepted. Indeed, as Koenig, who still practices in California, recently pointed out, the program catalyzed changes in local building codes, as well as in banking practices. Gone were stipulations that houses be outfitted with shutters and pitched roofs.

Perhaps most important, the program convincingly advocated a casual new lifestyle appropriate to California, based on "indoor-outdoor" living. Paradoxically, it encouraged a return to nature, coupled with an optimistic stance toward a future increasingly defined by technology. And the houses, though more "cool" than cozy, looked as if they would be enjoyable places to live in, with terraces and barbecue grills. A new lifestyle was at hand.

HOUSES—MORE COOL THAN COZY—EMBRACED A NEW LIFESTYLE.

Current interest in the *Arts & Architecture* program still runs high, as reflected in the recent publication of *Case Study Houses* (Taschen, 2002), a sumptuously produced book by Elizabeth A.T. Smith. Some argue that the program constituted more of a final flowering than a new beginning, resulting in "collectibles" for the cognoscenti rather than affordable habitation for the middle class. Yet it exerted a strong effect on such California merchant-builders as Joseph Eichler, who during the 1950s and '60s built more than 12,000 affordable, Modernist-inspired homes.

In 1949, only four years after Entenza launched the Case Study House program on the West Coast, the Museum of Modern Art in New York hired Marcel Breuer to design a model house in its sculpture garden. The most eye-catching feature of the one-story, cypress-clad house was its butterfly roof. Inside, clearly defined rooms had given way to more fluid spaces. Large expanses of glass enhanced the sense of openness and blurred distinctions between inside and out. Around 75,000 people flocked to see the house during its summer-long run, inspiring the *Woman's Home Companion* to cosponsor, with MoMA, a second house in the same location the following summer. Designed by Californian Gregory Ain,

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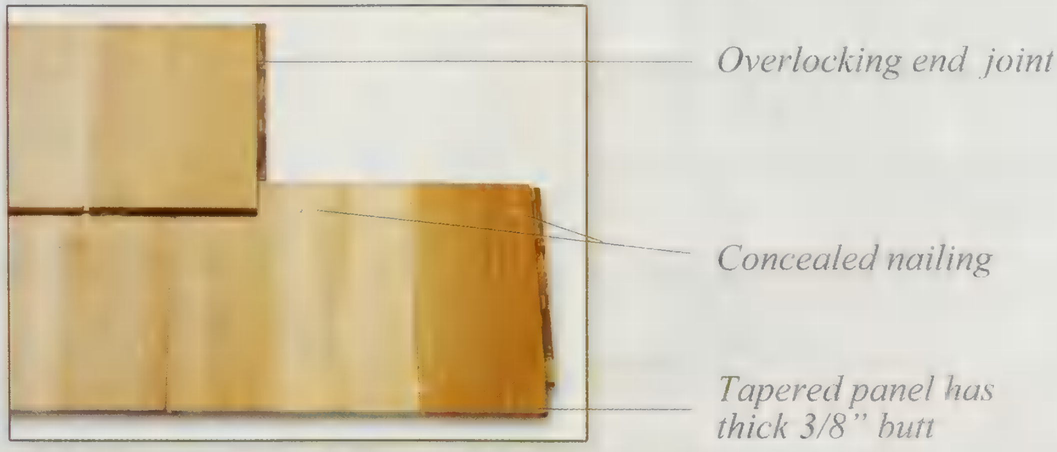

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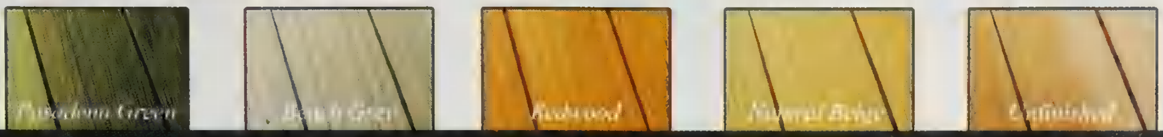

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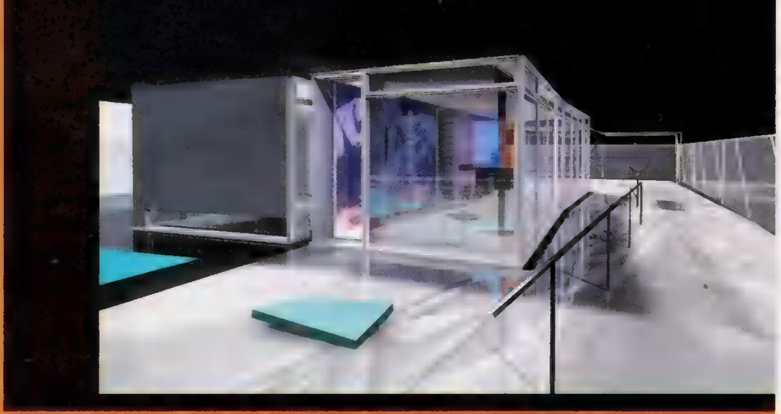

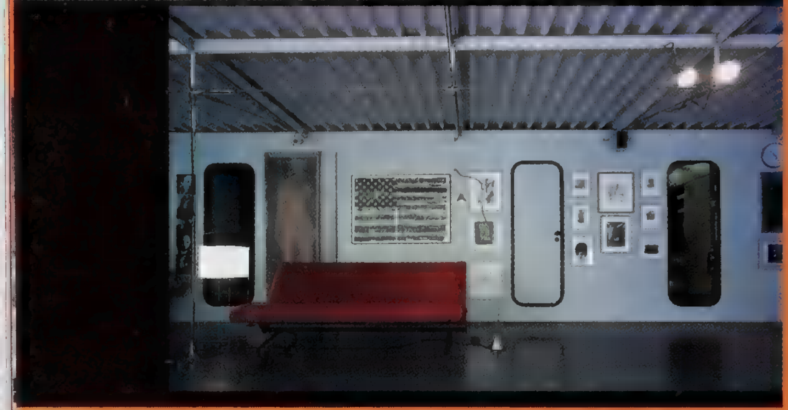

Top to bottom: Michael Bell's Glass House @2° for Houston's Fifth Ward, 1998; Benthem Crouwel's prefab house, for an Amsterdam competition, 1984; Genesis Homes for NAHB's exposition in Las Vegas, 2003.

the flat-roofed house was more severe and less expensive than the Breuer house. But it was still less affordable than the stylistically conservative houses being built at the same time by William Levitt on former Long Island potato fields.

In 1953, the Guggenheim Museum mounted a retrospective exhibition of Frank Lloyd Wright's work. The exhibition was housed in a temporary pavilion designed by the architect on the site of the future museum, which began construction three years later. The pitched-roof pavilion abutted a Usonian House that Wright built as a feature of the exhibition. The two-story, two-bedroom house demonstrated concepts he had been developing since the 1930s. Ironically, this example of Wright's vision, so rooted in a Jeffersonian model of agrarian democracy, sparkled all the more by virtue of its swanky, densely urban New York setting.

For the past three decades, interest in bringing innovative house design to the mass market has waned. Traditional houses have proliferated, but often as watered-down versions of earlier styles and lacking the ambition of the best Postmodern models. Even when competently designed, these houses break no new aesthetic ground. Developers and housing experts often suggest that cutting-edge design is unlikely to enter the mass market anytime soon. Economic factors conspire against developers taking significant risks with untested products.

Nevertheless, experimentation continues, albeit without the public attention it once drew. In 1998, Michael Bell, an architect then teaching at Rice University's School of Architecture, organized an exhibition, *16 Houses: Owning a House In the City*. Bell commissioned architects to design houses for Houston's Fifth Ward, within the confines of a federally funded voucher program focused on helping low-income families enter the housing market. Among the participating architects were Lindy Roy, Seth Howe, Stanley Saitowitz, and Carlos Jimenez, along with Bell. The entries were stylistically diverse, but included such boldly Modernist schemes as Bell's Glass House @2°, built of glass, steel, and concrete. Under the Fifth Ward Community Redevelopment Corporation, a design by Morris Gutierrez Architects has been built and another, by Jimenez, is in the works.

EXPERIMENTATION CONTINUES WITHOUT THE ATTENTION IT HAD.

Despite the great potential of efforts in Ward Five, viewed exclusively as blueprints for extensive development demonstration houses may be limited in their influence. Still, if new methods of building, such as computer-assisted milling and other prefabrication methods, make experimental house designs more realizable, as some architects predict, then demonstration houses could help introduce home buyers to a wide range of soon-to-be-available options.

And even if the new technologies do not exert a profound effect on the marketplace, a prototype house that successfully connected with the rich tradition of such efforts in 20th-century America might help refocus attention on the idea that exploring the unknown is worthwhile, and indeed, a necessity for a culture that does not wish to stagnate. And that, in and of itself, might be a very good thing. ■

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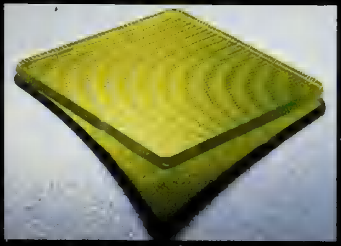

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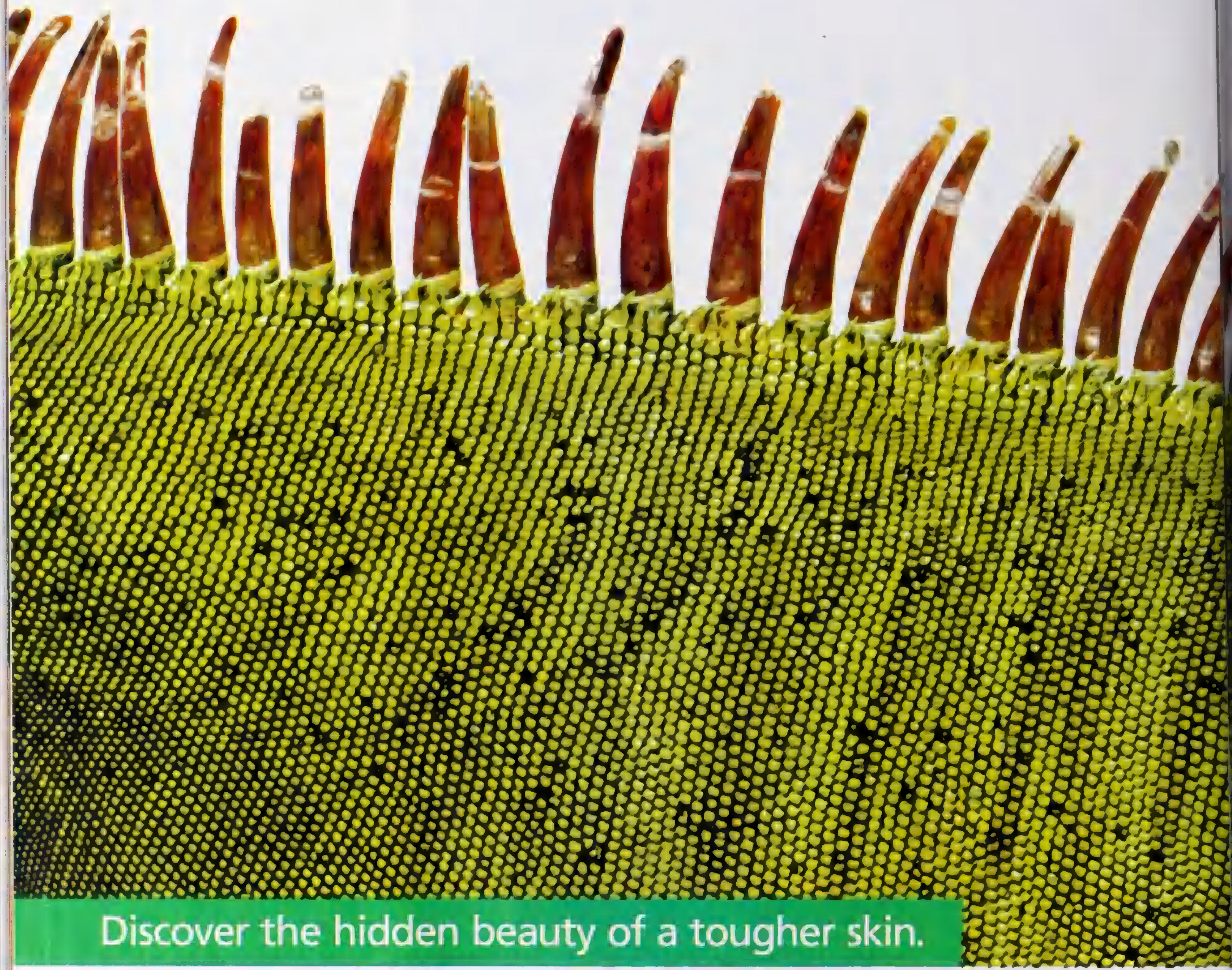

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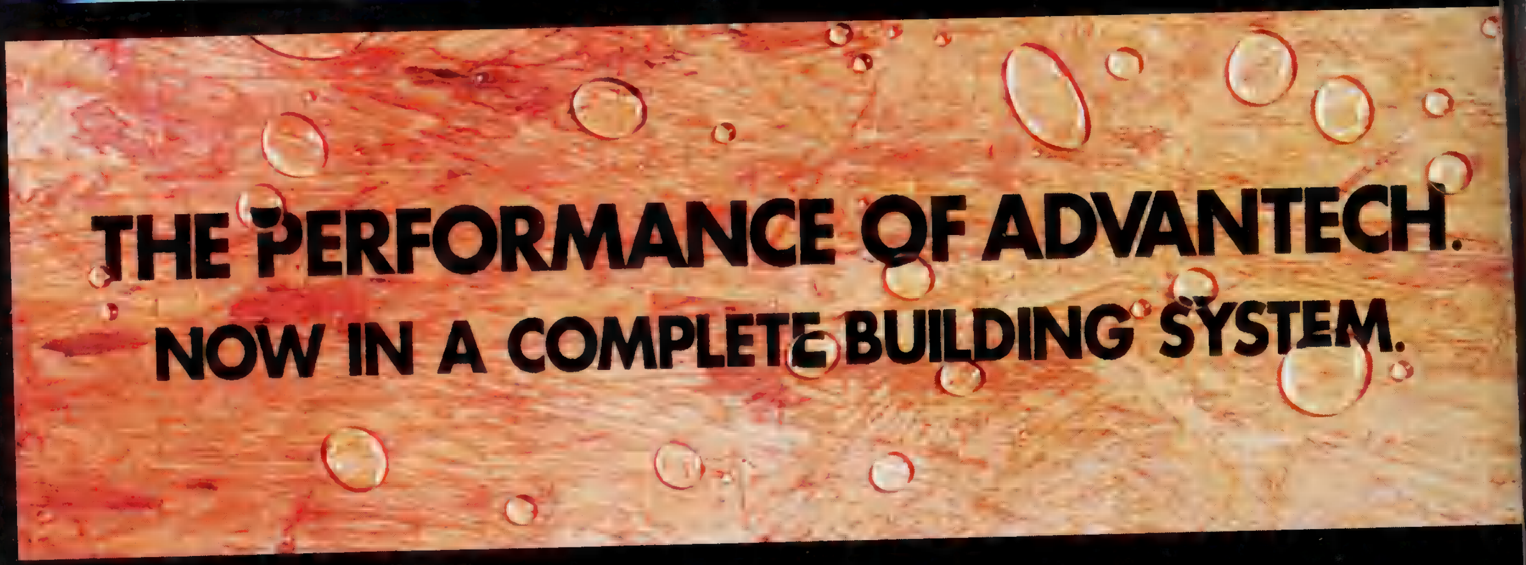

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Record Houses 2003

BUILDING TYPES STUDY 820

Dynamism and collage emerged as leading motifs in 20th-century art—and continue to play vital and evolving roles in architecture today. As this year's selection of Record Houses suggests, architects are actively exploring issues of movement—be it in kinetic building parts, in forms and compositions that imply vectors or potential energy, or in structures that prompt journeys through and around them. And while collage appears in architecture still influenced by Postmodernism and Deconstructivism and, one could argue, in the work of Frank Gehry, this motif currently finds expression most often through the visible layering of materials and textures. Sometimes the layering itself—with its potential for interstitial spaces and translucent boundaries—stimulates movement.

Such is the case with Sean Godsell's Peninsula House, in Australia: a glazed rectangular volume wrapped in a veil of thin wood battens. To enter the building, you must travel an elongated, semi-outdoor route, passing between the two skins. Like a wicker picnic hamper, this beach house can be unpacked, revealing its contents, when its outer hinged panels open. This layering is partly about privacy and partly about camouflage and attunement to the landscape.

1. Shigeru Ban
2. Sean Godsell
3. Thomas Phifer
4. Jim Jennings
5. Jarmund/Vigsnæs
6. Alvaro Siza Vieira
7. Valerio Dewalt Train
8. Mack Scogin Merrill Elam

Kinetic and visually light in other ways, Shigeru Ban's Picture Window House, in Japan, also defers to its setting. Its moving parts are large glazed panels that slide aside, literally opening up two parallel elevations—turning the house into a huge picture window to the sea. The openings extend the interior onto decks, ushering the inhabitants (with lightweight furniture) farther outside.

At Thomas Phifer's Taghkanic House, in New York State, a sheer, movable layer forms a sail-like brise-soleil over glass. And at Valerio Dewalt Train's Doblin Residence, in Chicago, a facade of seemingly impenetrable corrugated steel becomes transformed, offering sculptural variations on a theme, as its mechanical bifold doors peel back to disclose a hidden garden.

To discover the size and character of the Doblin and Taghkanic houses, you must move through and around them. The same holds true for the other projects in this collection—including Jim Jennings's Visiting Artists House, Alvaro Siza's Quinta Santo Ovidio, Jarmund/Visgnaes's Red House, and Mack Scogin Merrill Elam's Mountain Guesthouse—remarkably dissimilar as they are in form, materials, and site. In our pages, we invite you to follow the trajectory of Jennings's enigmatic concrete walls as they carve into a California hillside, to penetrate Jarmund/Visgnaes's deceptively modest entry in the outskirts of Oslo, and to ascend the ramp into Scogin and Elam's Georgia treetop aerie. Please feel free to move about—to peer between layers and behind the moving parts. *Sarah Amelar*

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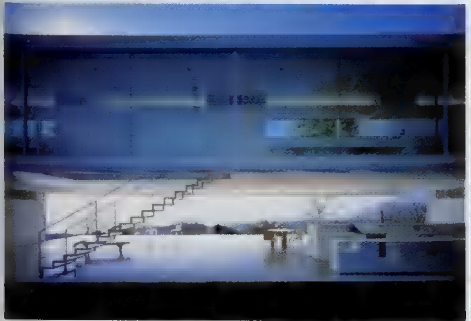

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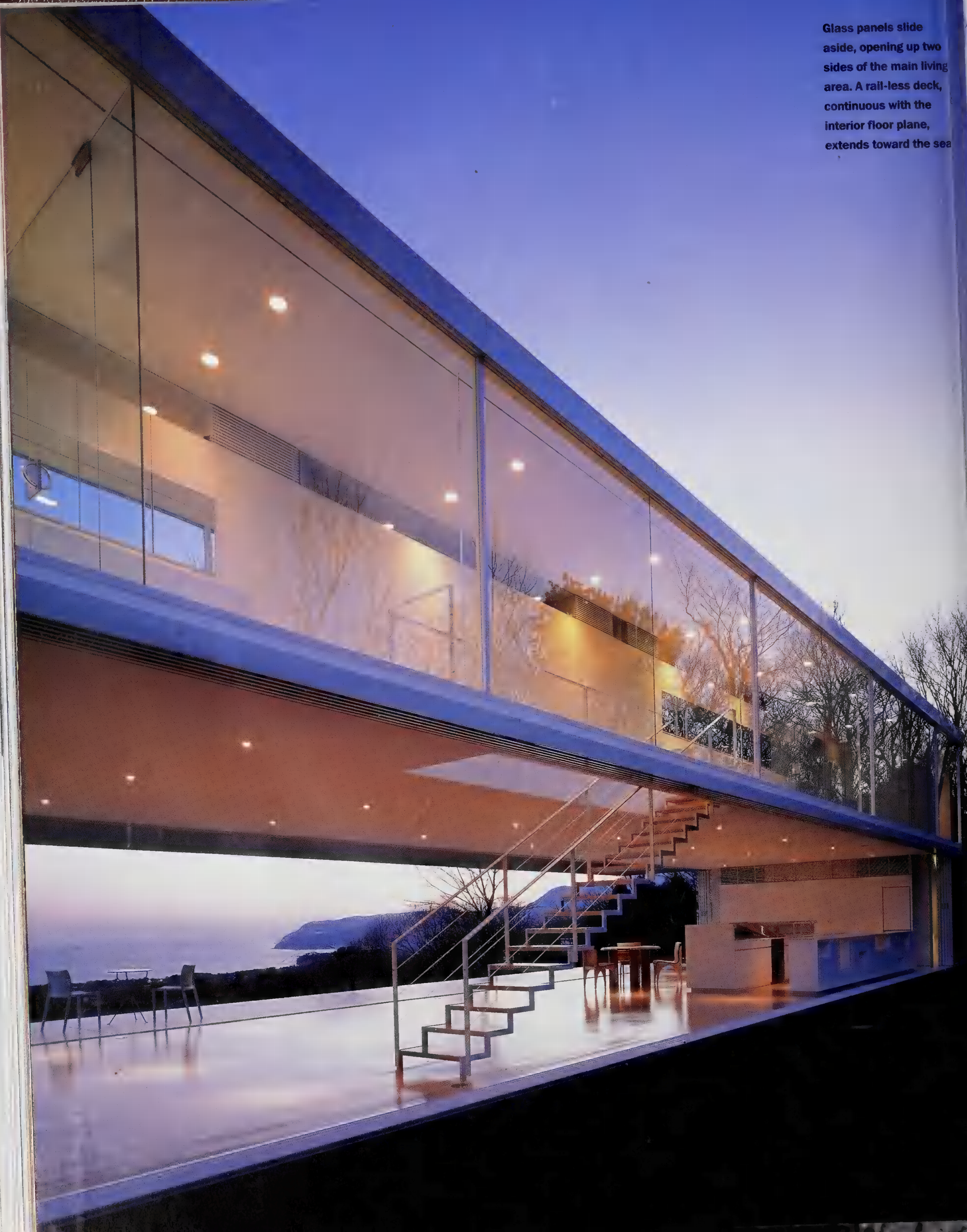
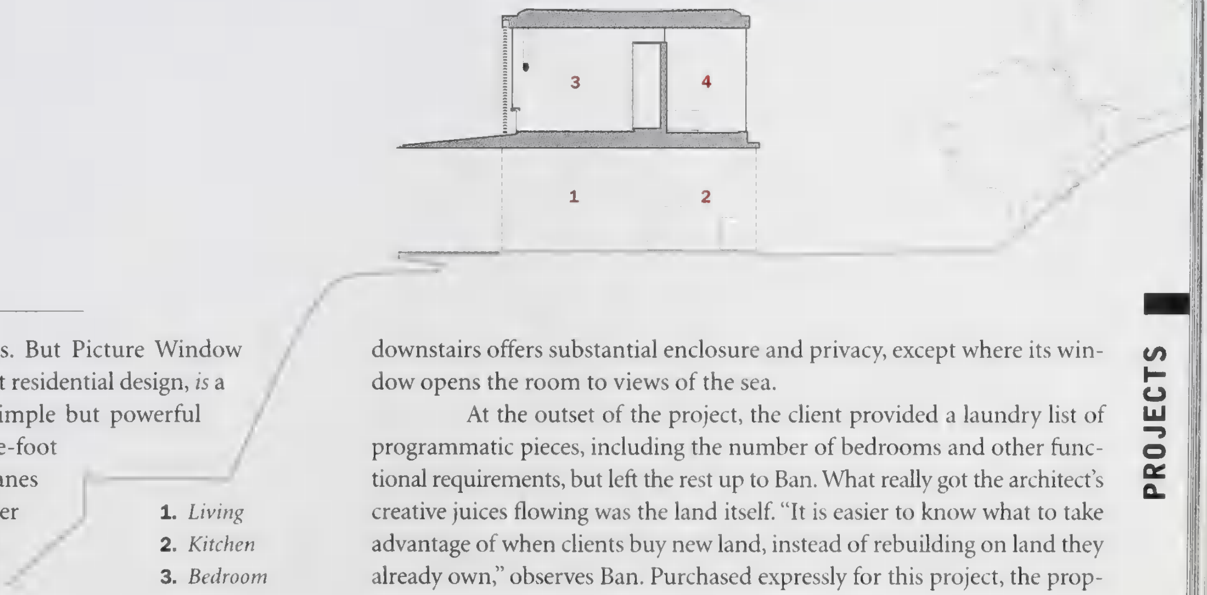


Glass panels slide aside, opening up two sides of the main living area. A rail-less deck, continuous with the interior floor plane, extends toward the sea

Shigeru Ban revisits the idea of a framed view, with walls that literally slide away, opening his PICTURE WINDOW HOUSE to the sea



By Naomi Pollock, AIA

Most houses have windows. But Picture Window House, Shigeru Ban's latest residential design, *is* a window. A remarkably simple but powerful scheme, the 2,950-square-foot structure consists of two glass membranes anchored by metal wall panels at either end. While the uninterrupted views of wooded greenery to the north and the Pacific Ocean to the south are spectacular, the complete openness of the ground floor's main room is sublime. When the room's sliding glass doors are pushed back, 66-foot-wide openings are unveiled on the house's long elevations, transforming the interior into a conduit for light, air, and sound, all flowing freely from forest to beachfront.

The main room—combining kitchen, living, and dining areas—opens directly onto a porch overlooking the water. A seamless extension of the interior floor, the porch is a rail-less platform, inspired by traditional *engawa* verandas (typical in Japanese houses and other indigenous buildings), which straddle the line between inside and out. Like bookends, a double-height entry foyer with a bathroom and a two-story pottery studio with a study flank the main space. (The owner, a retired widower with grown children, who visit frequently, is an amateur ceramicist.) Doubling as structural supports, the two end pieces carry the house's vertical load to the ground. They tie into the second floor's steel-and-concrete floor slab and trusslike web of columns, beams, and diagonal braces—designed like a bridge to span the lower level's unobstructed openings.

Upstairs, a corridor that doubles as a bathroom gives access to a storage area and four bedrooms. Even in Japan, where the need for absolute privacy is not as great as in the West, this pairing is unusual. "I took two places that are only used occasionally and combined them into one," explains Ban. Designed to beat the morning rush, this space is outfitted with five sinks, two toilets, and a tub. Whereas only tempered glass and curtains separate the functions here, a more conventional lavatory downstairs offers substantial enclosure and privacy, except where its window opens the room to views of the sea.

At the outset of the project, the client provided a laundry list of programmatic pieces, including the number of bedrooms and other functional requirements, but left the rest up to Ban. What really got the architect's creative juices flowing was the land itself. "It is easier to know what to take advantage of when clients buy new land, instead of rebuilding on land they already own," observes Ban. Purchased expressly for this project, the property has an unimpeded ocean view—a rarity on the Izu Peninsula. Just 60 miles from Tokyo and known for its relatively gentle climate, Izu is dotted with first and second homes. But Picture Window House, its owner's full-time residence, sits atop a steep hill covered with natural foliage—placing it well beyond direct sight lines of even the closest neighbors.

Because of the site's relative isolation, privacy from outsiders was not an issue. Yet the building's permeability required various measures to keep it comfortable year-round. Screens to keep out insects were a must, though this filter compromises pure and total openness to light and air. Supplementing passive measures, heated floors and an electric heat pump provide climate control when outdoor temperatures soar or plummet. "Heat pumps are the most economical system in Japan," says Ban. "We don't like to heat or cool an entire house, only rooms where there are people—and even those not 24 hours a day."

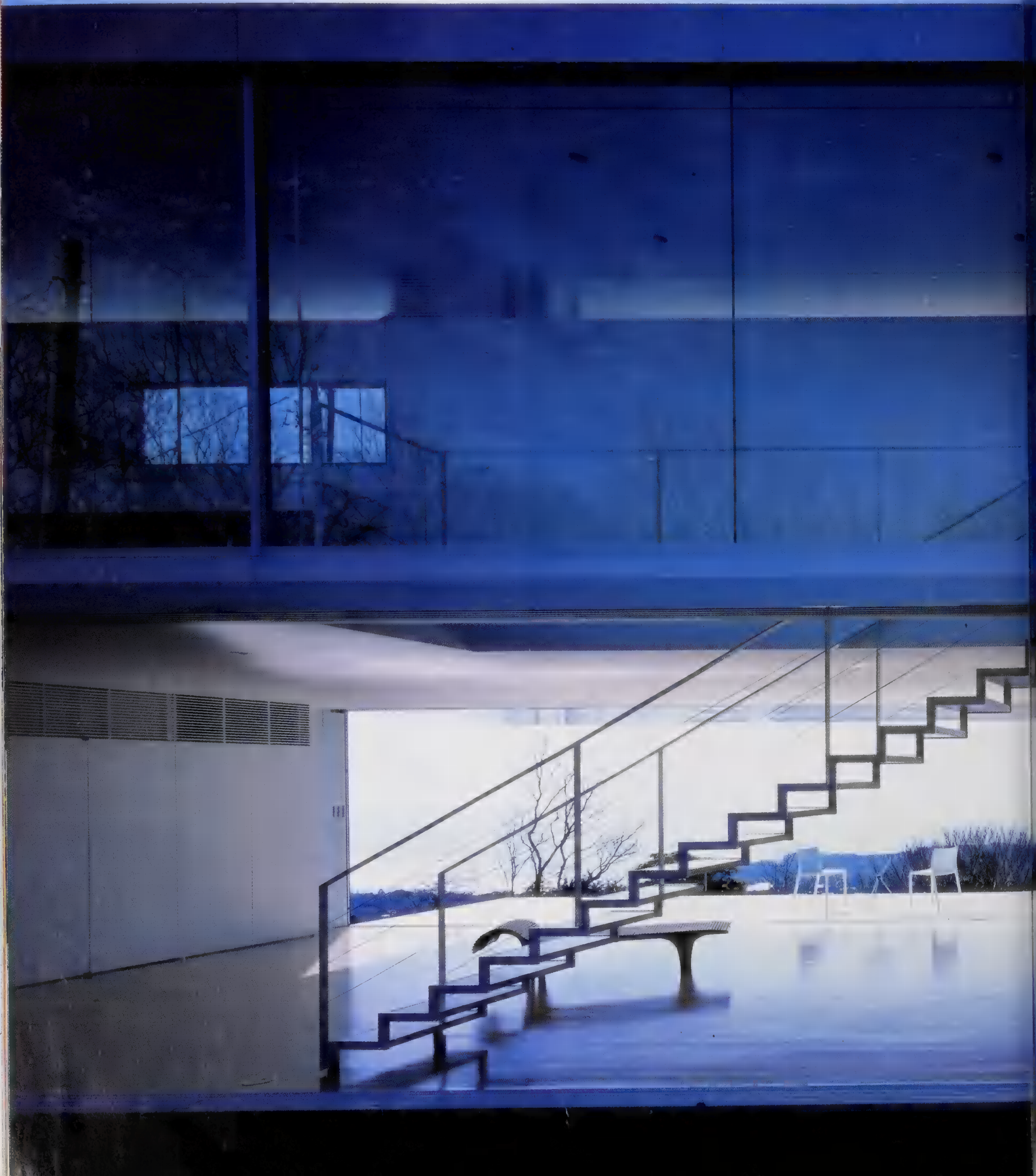
The glass skin required a symphony of blinds, curtains, and a roof overhang to reduce summer heat gain while still letting in warming winter rays. Though interior-mounted devices sufficed on the north side, exterior Venetian blinds were necessary to modulate the sunlight entering the second-floor bedrooms. Elegant as well as practical, the adjustable aluminum slats mesh with the wall's overall composition and emphasize the facade's strong horizontal lines.

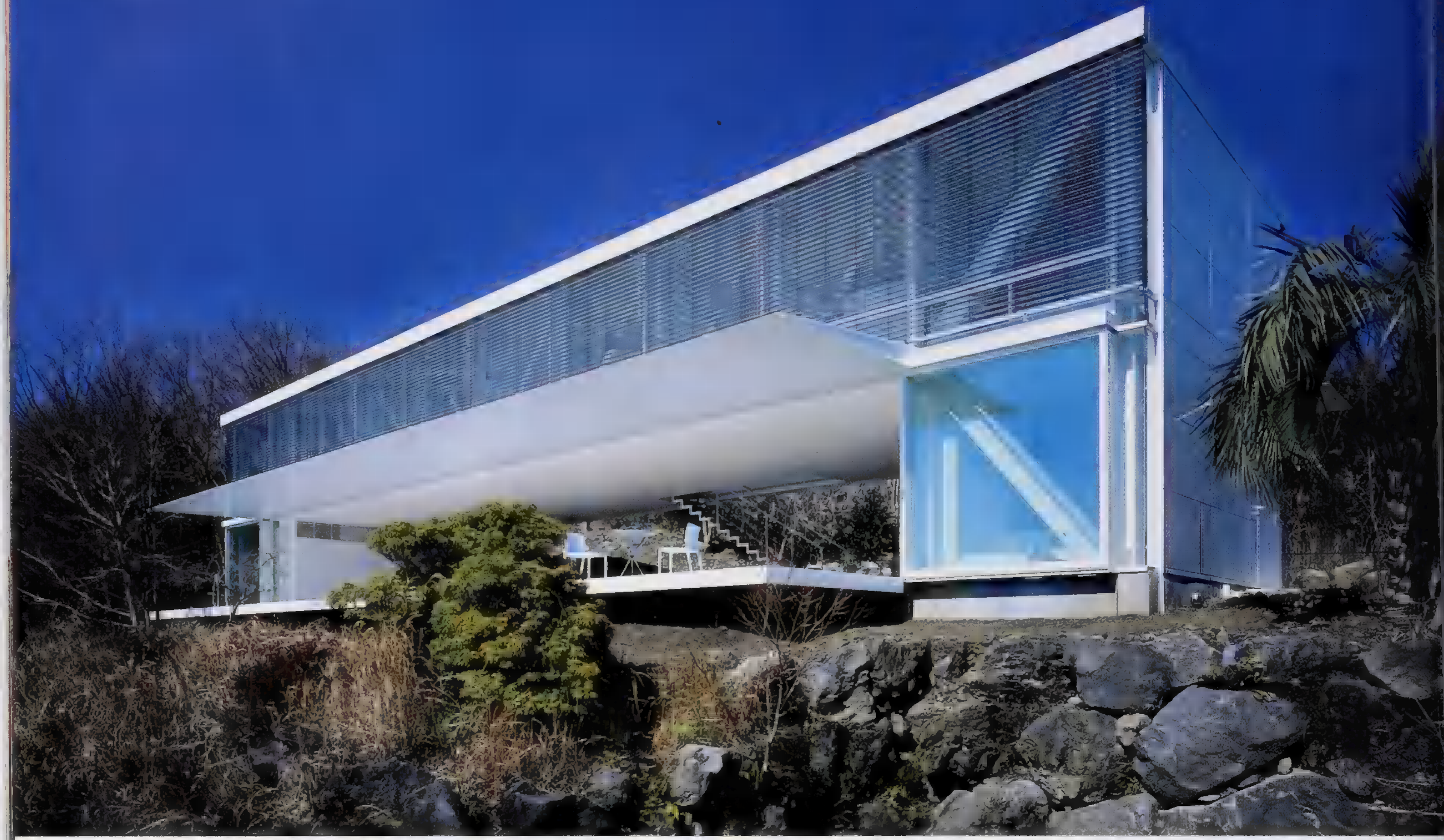
But the house's skin derives most of its uniqueness from a system of sliding doors: a horizontal strip of eight 8-foot-square transparent

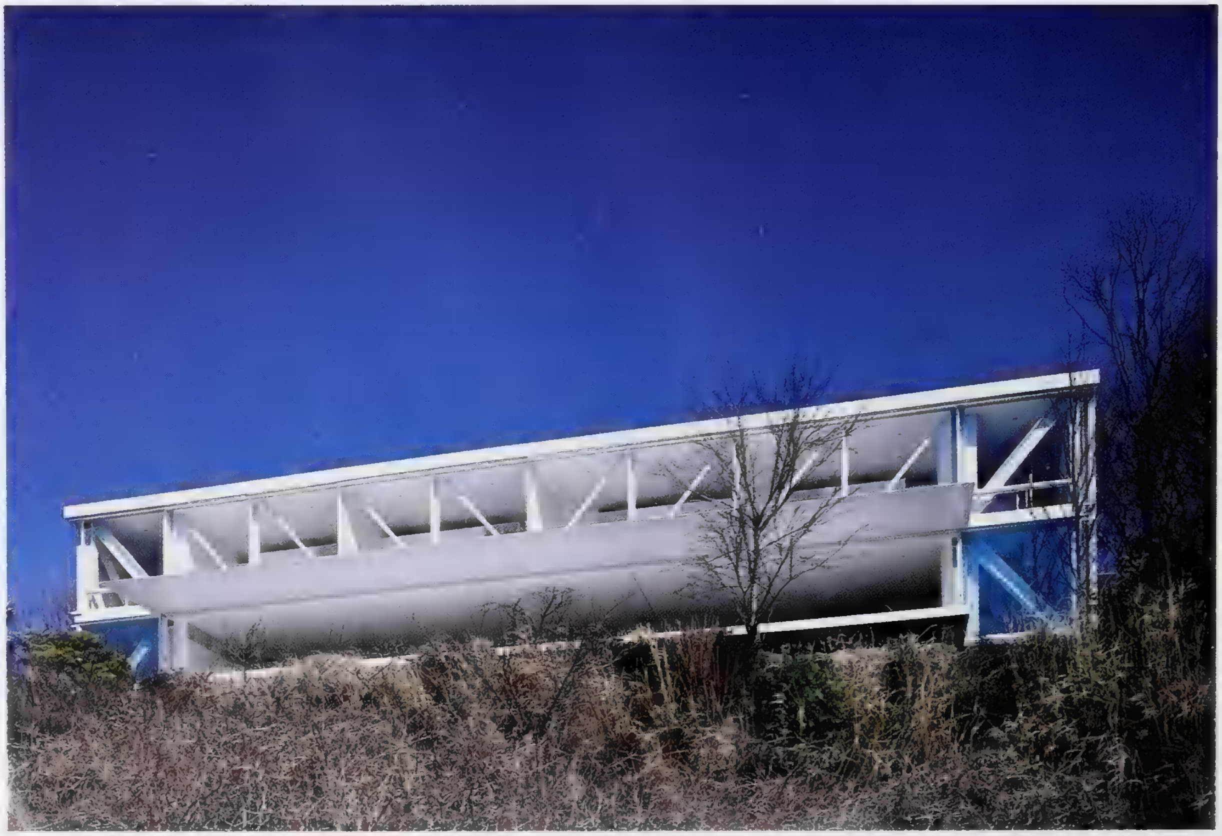
Naomi Pollock, AIA, RECORD's special international correspondent, is based in Tokyo.

Project: *Picture Window House, Izu Peninsula, Japan*
Architect: *Shigeru Ban Architects—Shigeru Ban, principal in charge; Nobutaka Hiraga, Jun Yashiki, project team*
Engineer: *Hoshino Architect & Engineer (structural)*
General contractor: *Daido Kogyo*

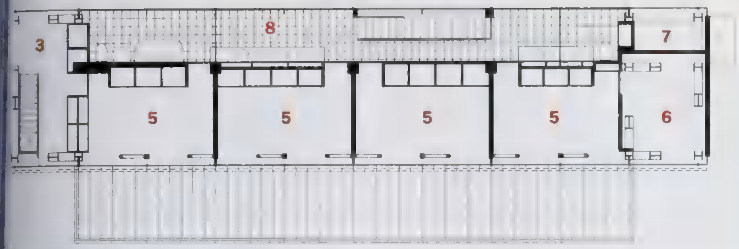
The structure allows for a 66-foot clear span on the lower level. Upstairs, a string of bathrooms, doubling as a corridor, runs along the periphery. A long mirror over the sinks reads almost as a window to the leafy views.



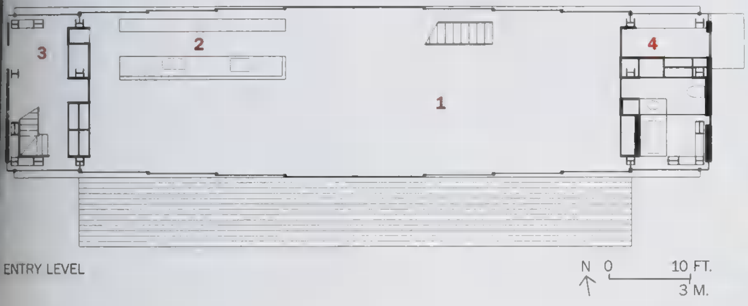




Like a bridge, the upper level's trusslike web of columns, beams, and diagonal braces and its steel-and-concrete floor slab all tie into the building's load-bearing ends. Exterior aluminum blinds may be deployed (above) or retracted (left). Inside, on the second floor, only glass partitions separate bathroom functions (opposite, bottom).



PPER LEVEL



ENTRY LEVEL

1. *Living/dining*
2. *Kitchen*
3. *Studio*
4. *Entry*
5. *Bedroom*
6. *Storage*
7. *Open to below*
8. *Bathrooms/corridor*

Most of the furnishings, including paper-tube chairs (right), are Ban's designs.

panes on each of the long elevations. Though many architects in Japan use sliding doors—*shoji*, translucent paper screens, and *fusuma*, their opaque cousins, are deeply rooted in traditional Japanese architecture—Ban exalts them. "To me they are the most important device for realizing the main themes of a house: the indoor-outdoor connection and flexible space."

Ban's first experiment with sliding doors emerged as a secondary event in his 1995 Paper House, an initial foray into his now well-established realm of paper-tube construction. Here, a thin layer of transparent panels, which can be stowed away, enclose the house, fusing its interior and exterior and spotlighting the undulating paper-tube wall looping around the center of the building. In his Wall-less House and 9 Square Grids House, both completed two years later, sliding doors take the main stage. Both houses consist of a platform, or "universal" floor, with movable panels that can divide or open the interior. While the inside of Wall-less House can be split into two parts, 9 Square Grids House, crossed with channels, offers a broader range of possible divisions. And sliding doors are not the only means to Ban's desired ends. He wrapped his House with Curtain Walls in two-story-high fabric sheets that can open completely. And he is now finishing a house enclosed in metal garage doors that roll up, merging inside and out.

Ban's practice of incorporating unusual elements in unexpected places has both shock value and whimsy. Many of his devices and their impact on living spaces may seem extreme. But architectural thrill-seeking is not what motivates him. It is the desire to realize his ideas in their most pristine form. As in Ban's other work, Picture Window House reveals both the clarity of his thought and the purity of its expression. ■

Sources

Doors: *Tokyo Press Kogyo (aluminum)*

Windows: *YKK*

Lighting: *Vola*

Exterior aluminum blinds: *Tachikawa Blind Kogyo*

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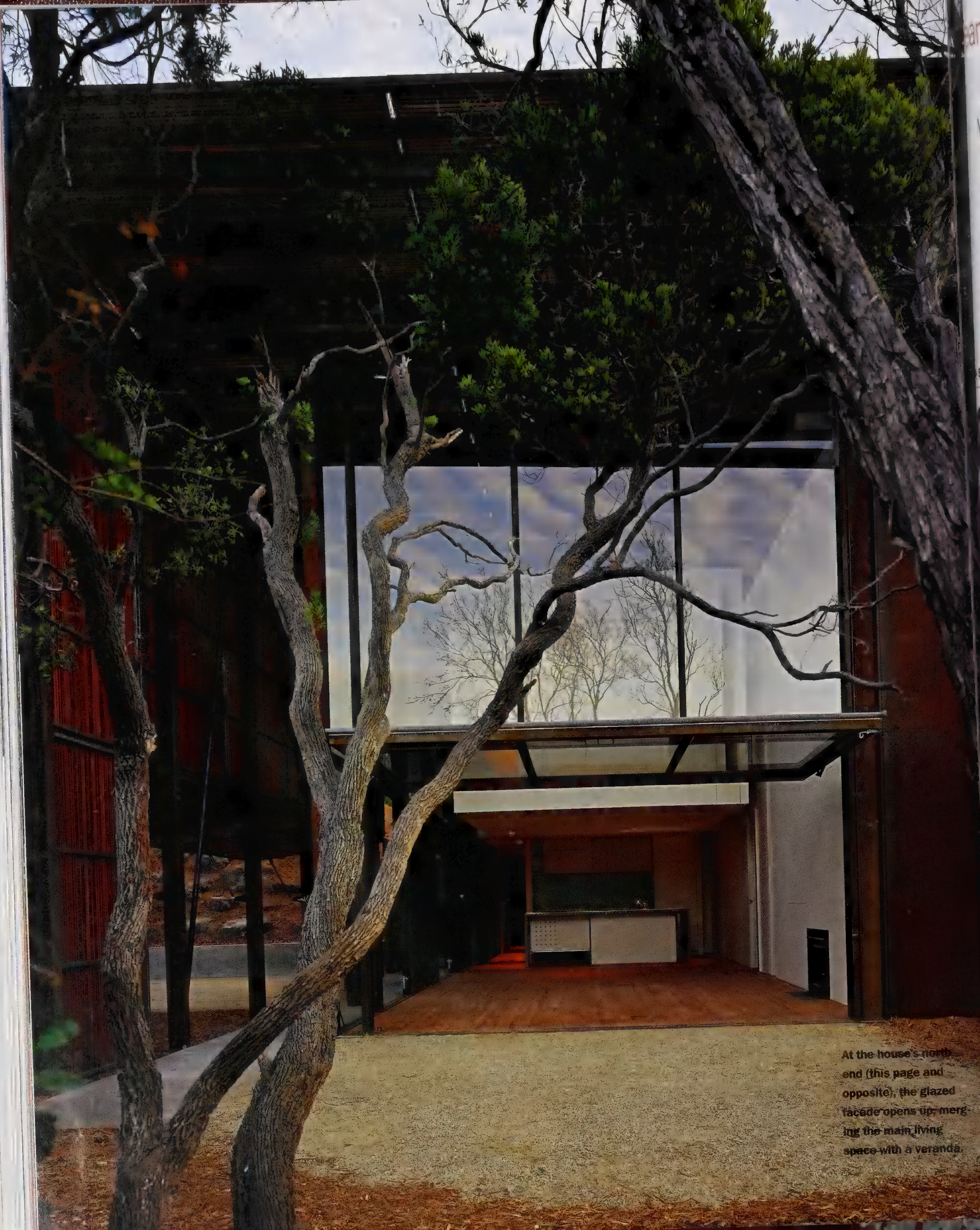
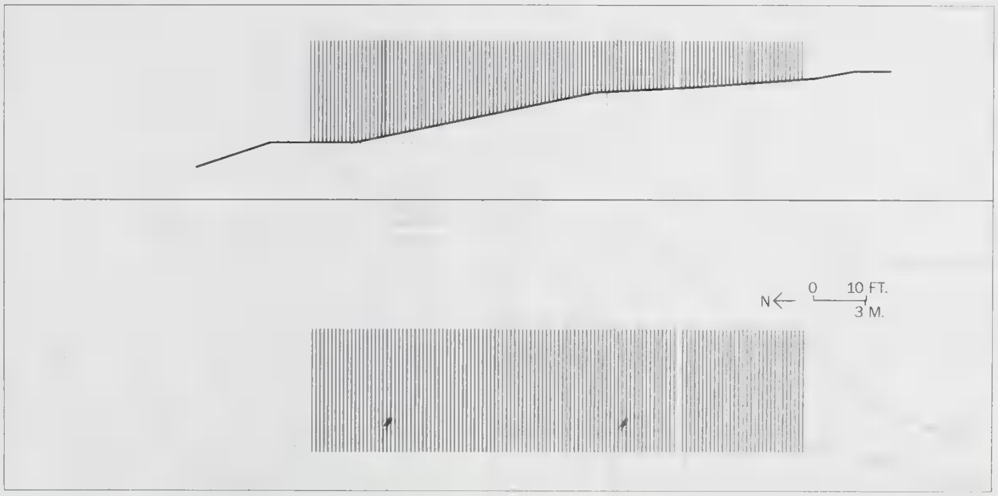


At the house's north end (this page and opposite), the glazed facade opens up, merging the main living space with a veranda.

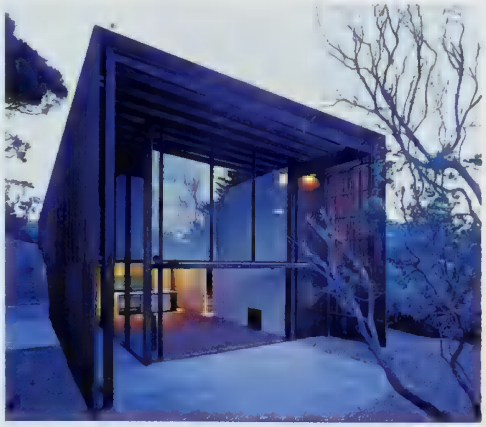
Sean **Godsell** transforms a seemingly simple box, wrapping his **PENINSULA HOUSE** in a veil of slender wood battens

By Sand Helsel



Cynics may say that Sean Godsell has created yet another immaculate box—and they would be right. In what might be termed the architect's own "case study" program, he has generated a series of award-winning houses [see RECORD, October 2000, page 208] that use apparently simple geometries to interrogate the landscape and offer antidotes to standard suburban dwellings (and lifestyles). His latest version, the Peninsula House, on the Mornington Peninsula, 60 miles south of Melbourne, Australia, may appear the most extreme—with 5 miles of slender recycled timber battens relentlessly wrapping both long elevations and the roof—but it is also the most refined and rich with nuance.

The approach to the house follows a dirt road through densely vegetated dunes bordering a coastal reserve and cliffs rising from the Bass Strait. Largely screened from neighbors by native trees, the 2,300-square-foot weekend house reveals itself gradually—at first, coming into view from its southern end, as a modest, one-story, seemingly freestanding carport, and only later exposing its full size and complexity. By partly burying this rectangular volume in a sloping site, Godsell charges an otherwise neutral box. He creates an immediate tension between the pure rectilinear form and the rugged topography in which he embeds it.



At close range, the apparently straightforward box takes on other levels of subtlety. Beneath the screen of wood battens—which is open at the north and south ends—the architect encloses the interior in a glass-and-steel skin extending across most of the ceiling. In earlier houses, Godsell used a double skin as the primary shield against the elements, but here he also explores the relationship between the layers. The jarrah wood screen and glass enclosure allow for interstitial spaces that belie the simplicity of an essentially three-room brief: kitchen/dining/living, library, and bedroom.

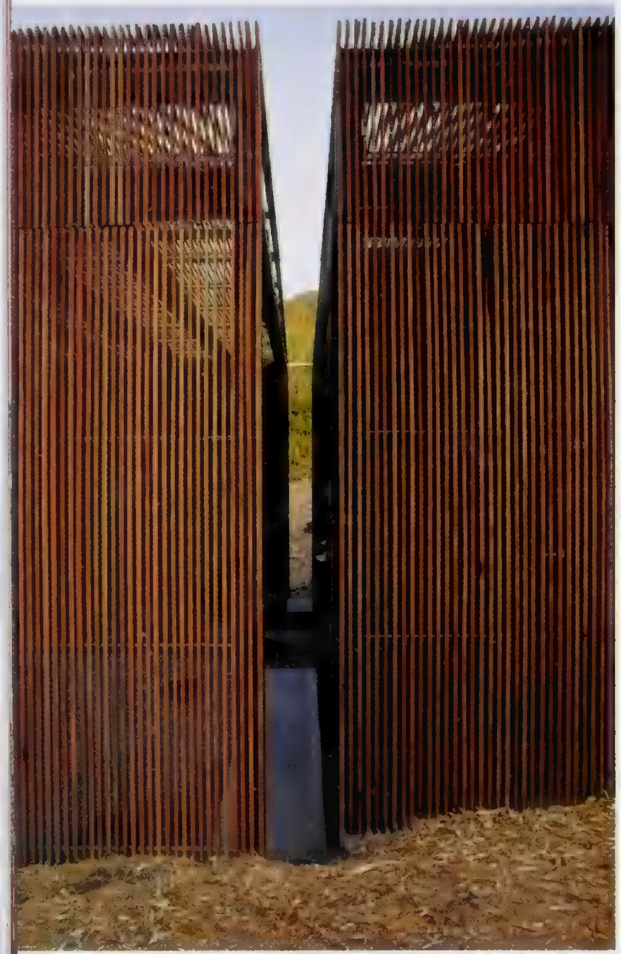
Sand Helsel is an associate professor of architecture at RMIT University, in Melbourne, and the Ruth Carter Stevenson Visiting Fellow at The University of Texas at Austin.

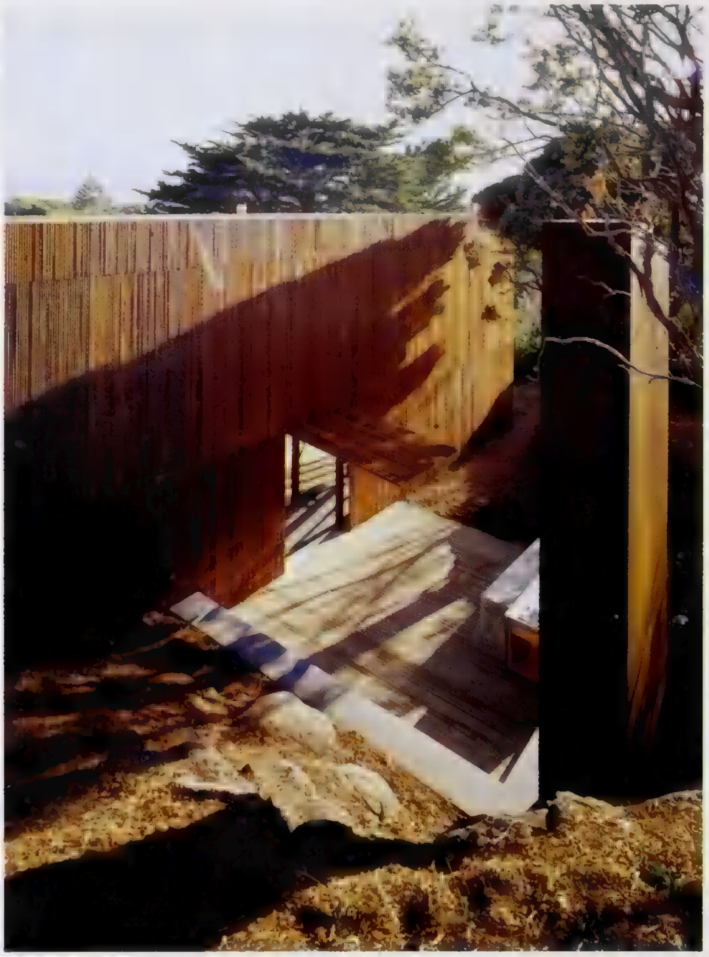
On the east elevation, Godsell pulls the two skins apart, parallel to one another, and inserts between them an entrance corridor that is screened overhead but open to the elements, as it steps down from the slope's high point to the building's north end. This procession, following the contours of the land, plays against the roofline's constant horizontality, or datum.

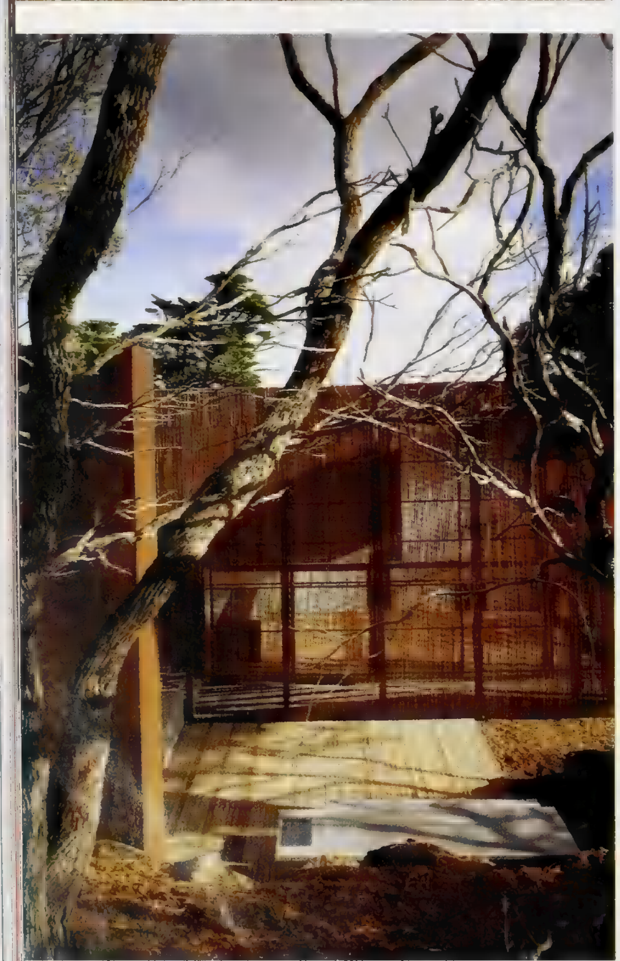
This route simultaneously reveals and conceals parts of the interior and the landscape. Only at the glazed entry to the double-height living area does the full volume of the building appear. To reach the interior, the length of the house must be traversed. Such highly orchestrated circulation is a Godsell trademark—originally employed in Godsell House I to make a tiny building appear grander—producing an attenuated sense of arrival (and delight). The experience of the journey and the unfurling narrative of occupancy counter any rigidity implied in the geometry.

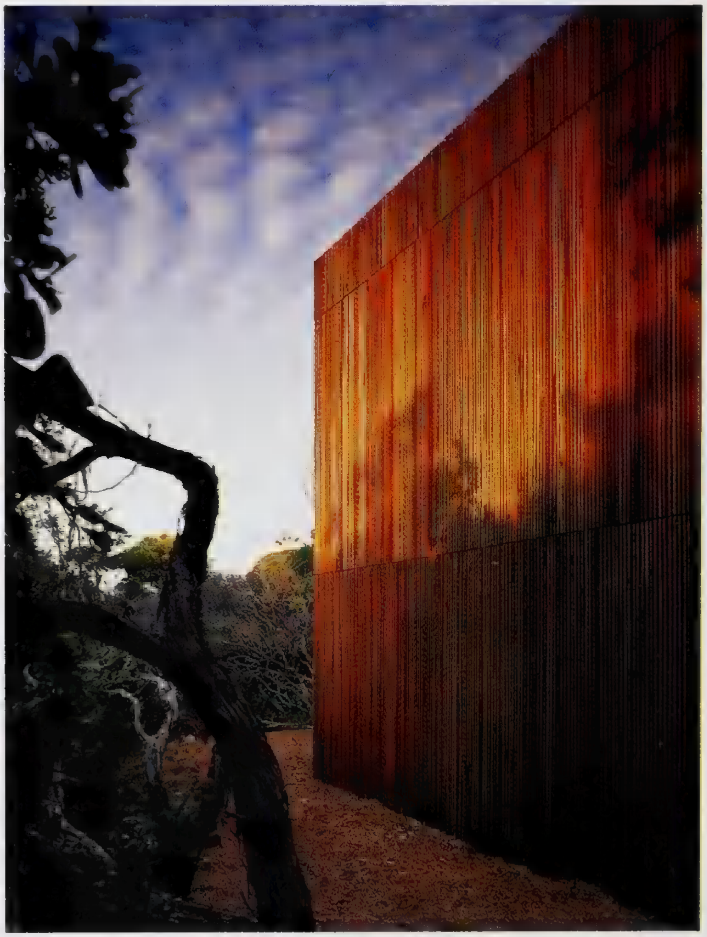
By partially submerging the house in the land along its north-south axis, Godsell immediately differentiates two types of space. At the structure's southern end, excavation into the hill provides for a sheltered retreat, while at the opposite end, a double-height area celebrates brilliant northern light (the equivalent of southern light in the northern hemisphere) and views toward sea and sky. In this main space, roof slats over glass mark the sun's passage, recording the ephemeral against the rectilinear.

Project: *Peninsula House, Victoria, Australia*
Architects: *Sean Godsell Architects—Sean Godsell, principal; Hayley Franklin*
Engineer: *Felicetti*
General contractor: *Kane Construction*

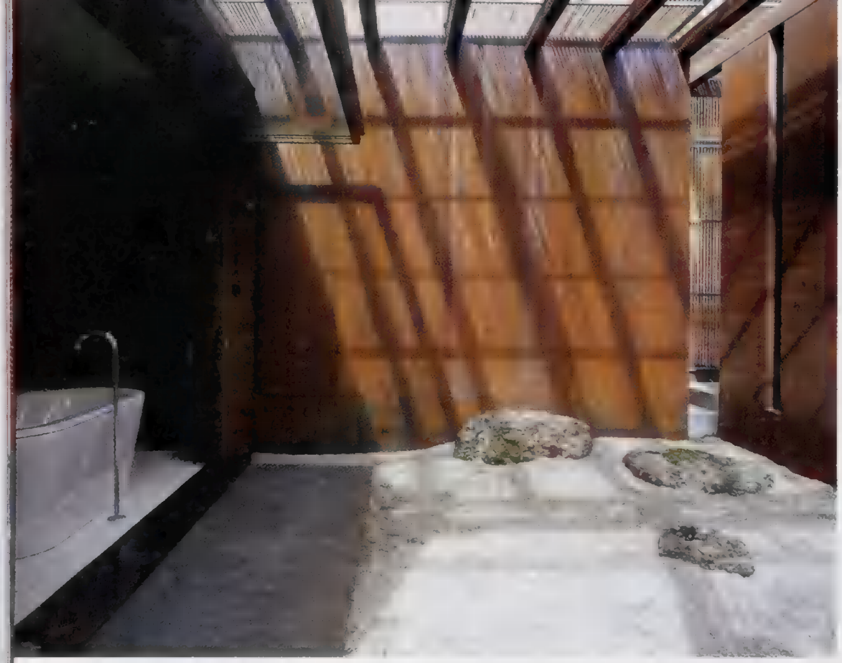


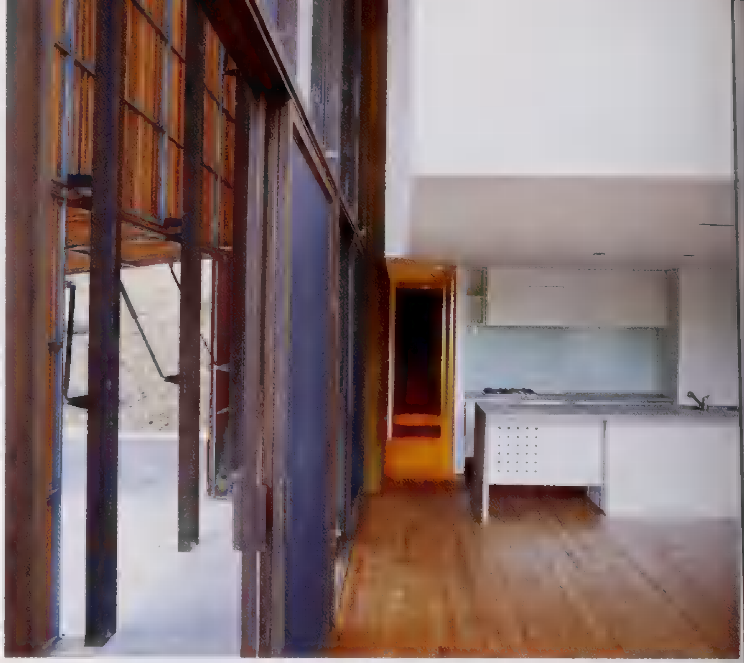






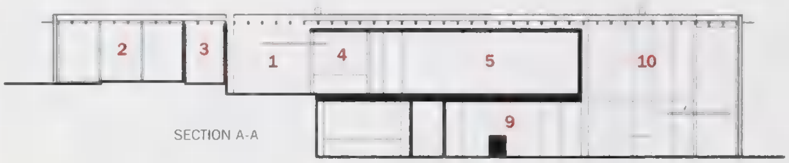
The wood screen metamorphoses, changing visually with light and vantage point (this spread), sometimes appearing as a single opaque material (this page, bottom right) and other times as a sheer veil (bottom left and opposite). A slot separates the carport from the main house (top left). Hydraulically operated panels open the outer skin (top right).

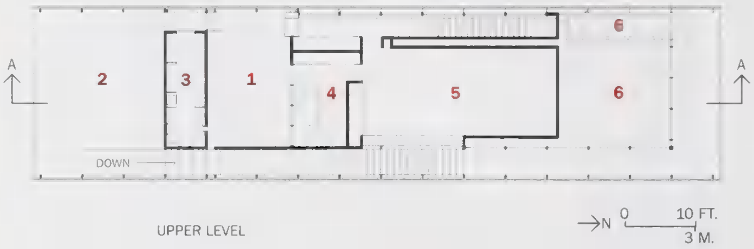


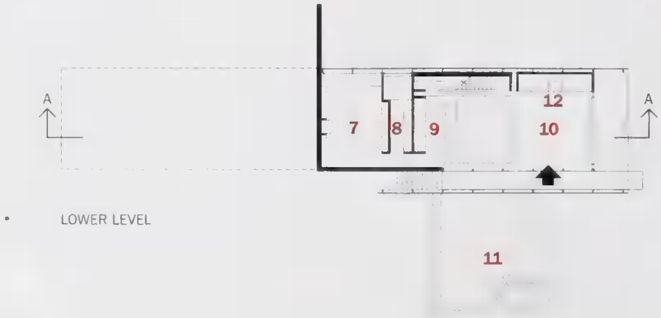


1. *Courtyard*
2. *Carport*
3. *Storage*
4. *Bath*
5. *Bedroom*
6. *Open to below*
7. *Library*
8. *Laundry/bath*
9. *Kitchen*
10. *Living*
11. *Barbecue patio*
12. *Fireplace*

Operable jarrah wood panels open a bathroom onto a shaded courtyard (above), or the entry corridor (opposite) onto the kitchen (right).







Interior moves further modulate the seemingly simple volume. Within the double-height living area, the architect cantilevers a cocoon-like upper-level bedroom, creating a retreat free of attachment to the exterior walls or roof. The insertion of a kitchen and dining area beneath the cantilever produces a relatively compressed space, in bold contrast to the expansiveness and intense illumination of the living area beside it. A solid block of kitchen cabinets and appliances and a laundry room further sequester a study, located to the south, into the hollow of the land.

By opening or closing panels within the continuous jarrah screen, the owners, a couple, can unpack the house upon arrival and pack it up when they depart—an apt metaphor for a beach house, as well as protection against winter storms and harsh summer sun. Top hinged, these panels are controlled hydraulically. Throughout the house, Godsell subtly and masterfully transforms the roles of his wood and glass skins. Outside the living room, for example, the jarrah sheath extends beyond the glass box, shading a veranda to the north. Meanwhile, the omission of roof glazing between the carport and bathroom creates an internal, open-air court, a rock garden bathed in filtered light. Here, a counterweighted glass wall can open to extend the bathroom into this tranquil space. And between the kitchen, entrance corridor, and exterior, wood panels can lift, making seamless transitions and providing a canopy over a barbecue deck or outdoor room.

Animating the interior and exterior with filtered light, the batten screens tend to metamorphose with changing light and vantage point. From an oblique angle, they may appear as a single-textured, opaque plane; but, when viewed more directly, they become veil-like. The slender recycled wood members, hand-threaded onto steel rods and separated by spacers, will warp and weather with exposure to sun and rain.

The increasingly irregular surface of this conceptually pure form is a paradigm of Godsell's practice to date. As a Modernist scholar and an experienced builder with a deep concern for regional and global issues, he does not fall back on the vernacular, but creates work with both local and international resonance. He often threatens that this will be his "last house," but the Peninsula is not just another house. It is a significant investigation within the larger body of his research. ■

Sources

Glazing: *Pilkington*
Hardware: *Lockwood*
Paints and stains: *Delux*

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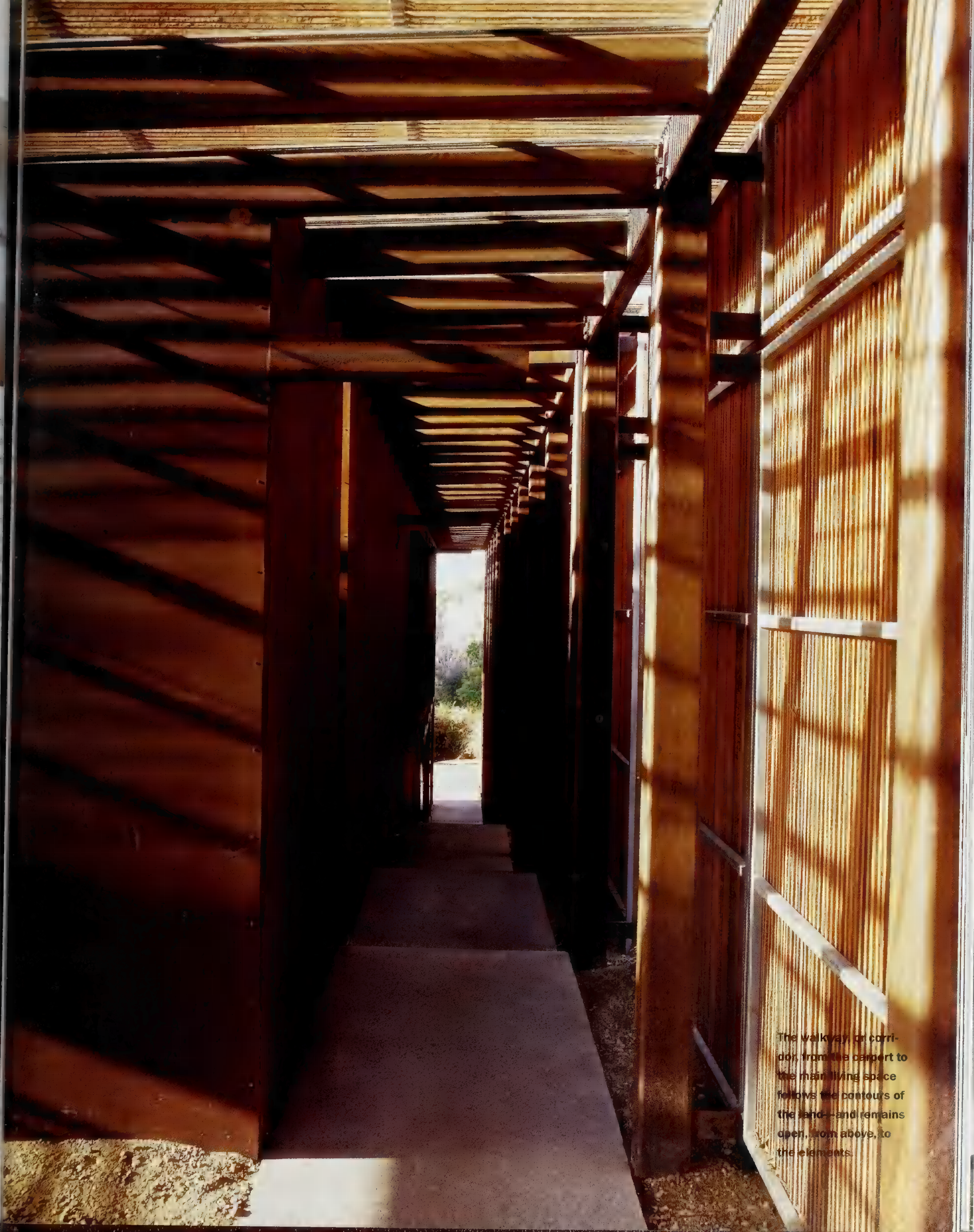
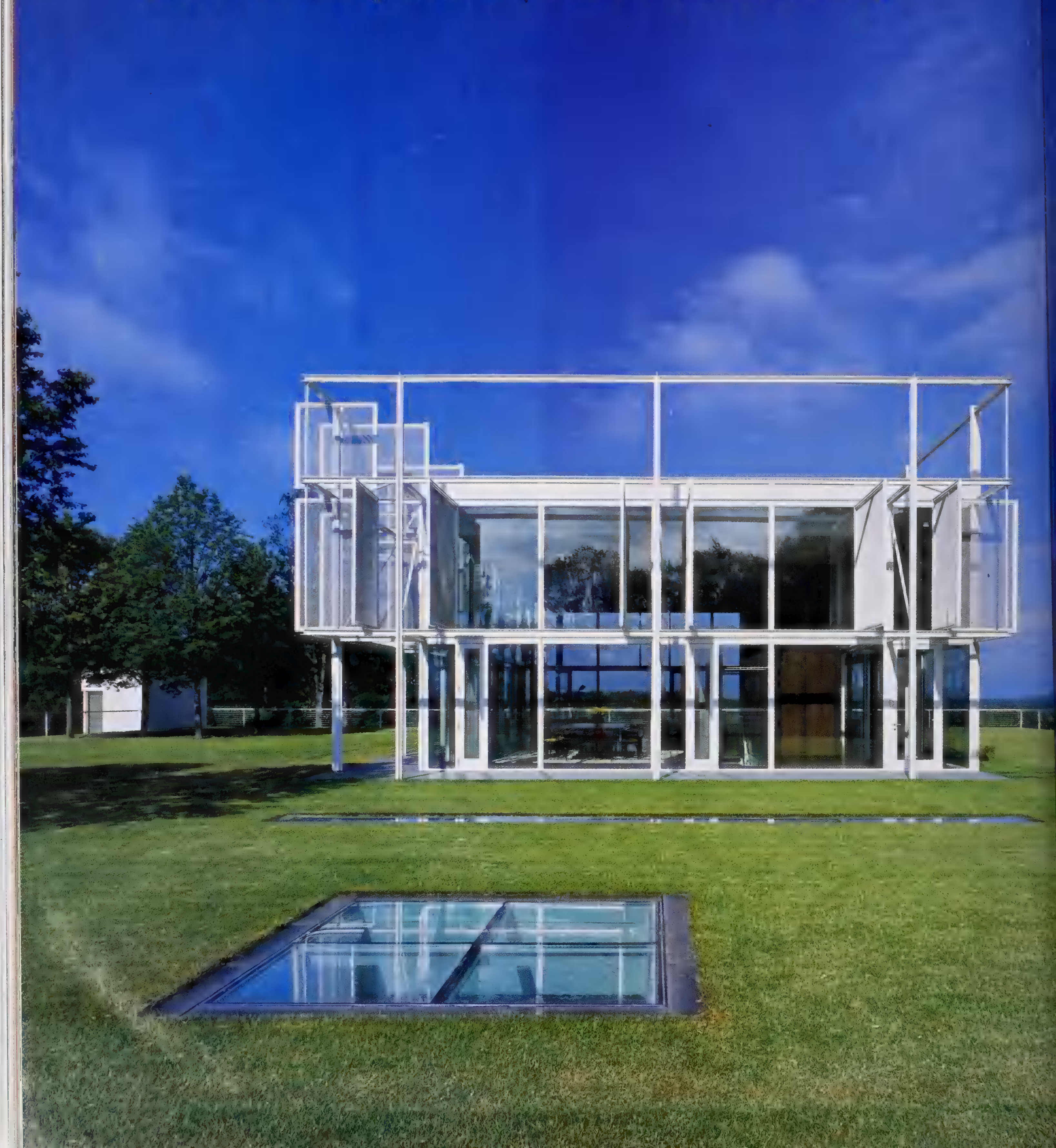


The walkway, or corridor, from the carport to the main living space follows the contours of the land—and remains open, from above, to the elements.

Thomas **Phifer** creates a dematerialized pavilion on a plinth for his **TAGHKANIC HOUSE** in the serenity of New York's Hudson Valley



A glass-and-steel pavilion containing the living and dining spaces sits serenely atop a grassy plinth, while the bedrooms and kitchen are underneath.

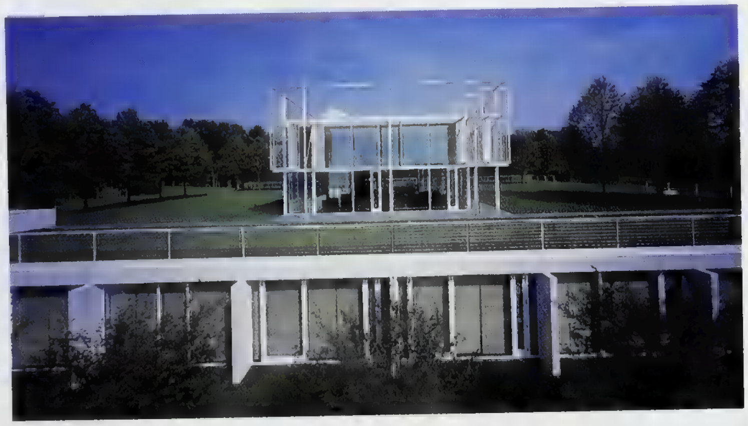
PHOTOGRAPHY: © SCOTT FRANCES

By Suzanne Stephens

From the main road, there is no hint that a house rises beyond the vista of trees, fields, and hills. As one approaches by the long, winding drive, the pavilion's astringently delineated glass-and-steel-frame structure appears so evanescent that it looks like the abstracted lineaments of a Modern villa hovering like a ghost over the terrain. From this perspective, the weekend house seems to have only one room—albeit a sizable, 30-by-60-foot one with a 15-foot-high ceiling. But there's much more to it. Gradually, a lower level comes into view, where glass-walled rooms jut out of the ramparts of the hill on which the pavilion sits.

This underground substructure, about four times the size of the pavilion, contains six bedrooms, a study, media room, kitchen and breakfast room, not to mention a wine cellar and a refrigerated cheese room. The owner, a very private person, wanted a place where he and his family could spend weekends and entertain friends amid the rolling hills and woods of the Hudson Valley, without ever having to lay eyes on another house. He also did not want his house to obtrude on the landscape. Not even the glass, wood, and steel guesthouse, a delicately diminutive complement to the main building, is easily visible.

In taking on the commission, Thomas Phifer, a New York architect, envisioned a dematerialized pavilion on a plinth. The rectilinear, tautly planar structure seems to perch lightly on the landscape in the manner of the early Modernist villas of Le Corbusier and Mies van der Rohe, or the late Modernist houses of Richard Meier. At the same time, Phifer's embedding of the lower level of the house in a grassy knoll recalls Renaissance country villas atop strongly demarcated hillside terraces.

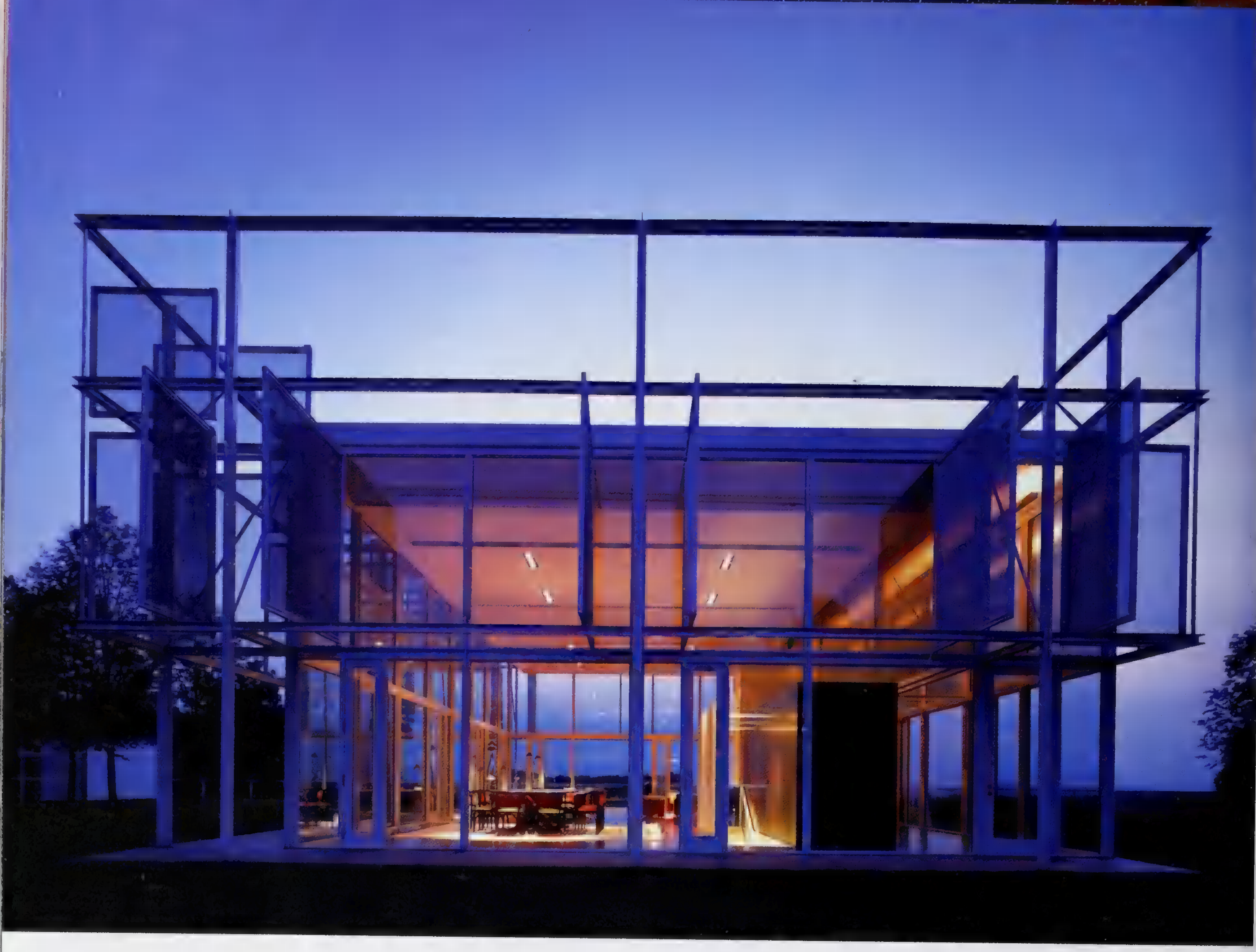


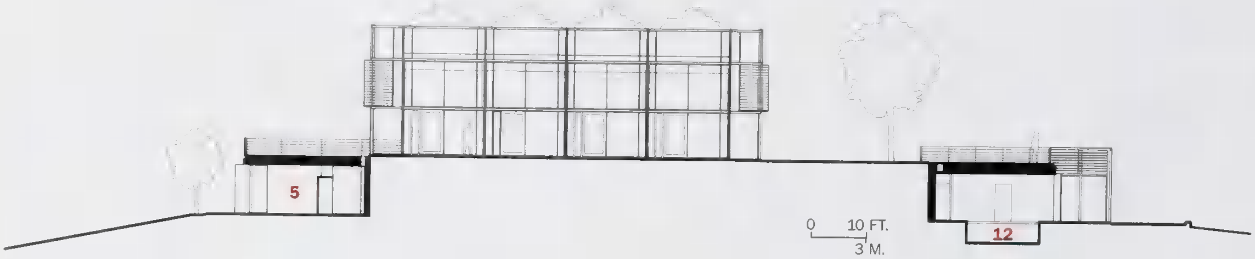
Phifer's exploration of these particular themes makes a strong case for architecture reflecting biography. The architect, who started his own office in 1997, was a design partner in the firm of Richard Meier and Partners from 1986 to 1996. And in 1996, when Phifer went off to Rome as a fellow of the American Academy, the young Modernist was soon fascinated by the Renaissance approach to placing villas in the landscape.

Working here with landscape designer Dan Kiley, Phifer carved out a bank of bedrooms along the western side of the slope, with the kitchen, indoor pool, and service areas gouged out of the opposite side. Kiley knowingly reinforced the architectonic qualities of the house through the manicured lawn, rectlinear pavers, and clipped Linden trees

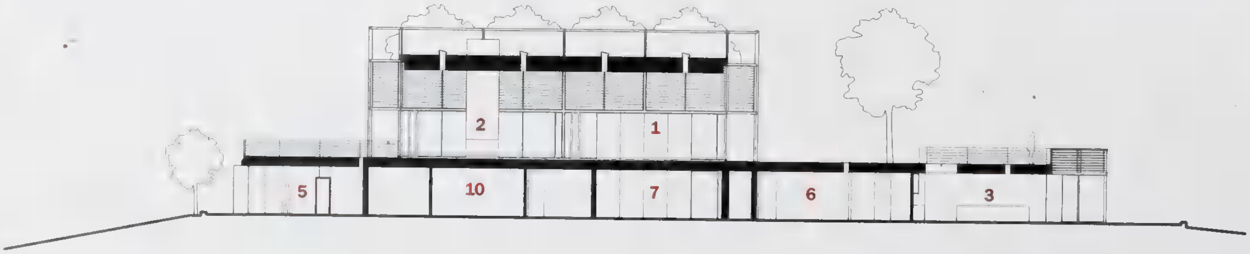
Project: *Taghkanic House, Hudson Valley, New York*
Architect: *Thomas Phifer and Partners—Thomas Phifer, AIA, principal; Greg Reaves, project architect*
Interior designer: *Muriel Brandolini*
Engineers: *Gilsanz, Murray, Steficek (structural); Altieri Sebor Weiber (m/e/p)*
Landscape architect: *Dan Kiley*

The breakfast room on the lower level of the house faces east (this page). Bedrooms on the west side open onto steel-edged, lawn-covered terraces (opposite, top), while the south side looks out to a grassy slope (opposite, bottom).



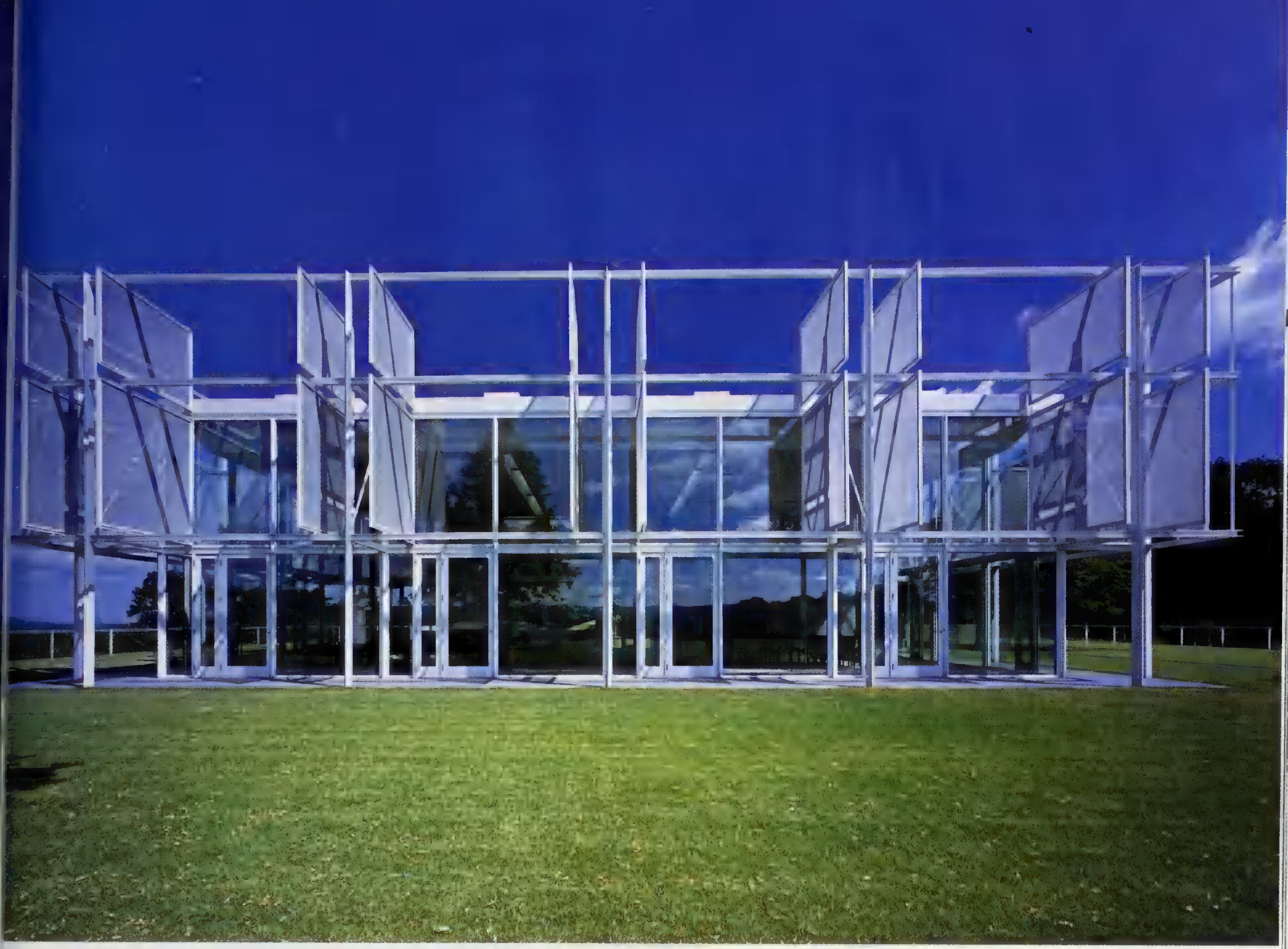


SECTION A-A

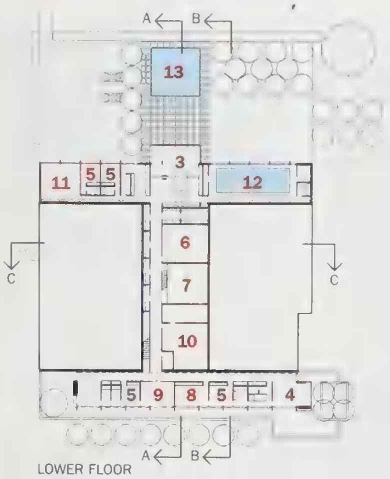


SECTION B-B

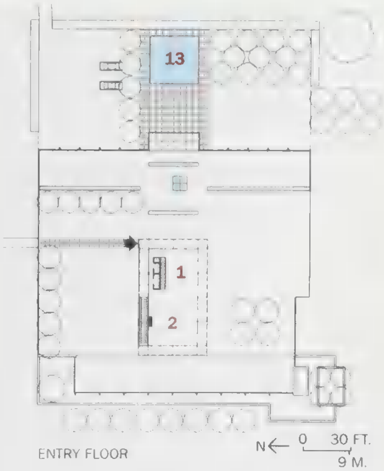
The white painted-steel framing supports aluminum-coil-mesh exterior shades, while the glass in the window wall is set within custom wood frames. The grass on the plinth looks like an outdoor carpet. To keep it green, a corrugated liner beneath the lawn contains cups to catch and store rainwater for delayed irrigation.



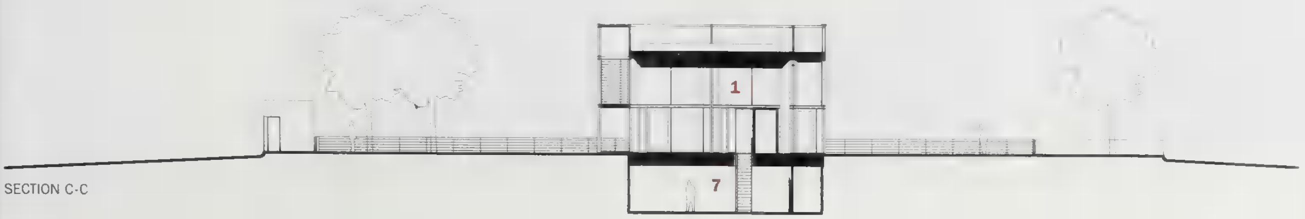
1. *Dining area*
2. *Living area*
3. *Kitchen/breakfast room*
4. *Master bedroom*
5. *Bedroom*
6. *Exercise*
7. *Media room*
8. *Playroom*
9. *Study*
10. *Mechanical*
11. *Garage*
12. *Swimming pool*
13. *Reflecting pool*



LOWER FLOOR



ENTRY FLOOR



SECTION C-C

on the podium, as well as the bosque of Sargent crab apple trees beside the geometrically defined terrace off the lower level's breakfast room.

The most startling thing about the spacious subterranean domain is that one doesn't have a sense of being below ground. Each leg of the H-shaped plan is edged with floor-to-ceiling glass window walls, opening up the interior to views and light. Long slots of skylights penetrate the grassy roof, bringing additional illumination indoors. The slots also demarcate the location of the east and west retaining walls of the concrete structure, "where architecture meets earth," says Phifer.

Connecting one side of the house to another (the two legs of the H) is an underground transverse hall 75 feet long, a masterly volumetric exercise of planar surfaces, where the poured-in-place-concrete structure has been plastered and, in some places, sheathed in sand-colored anigré wood. Although this hall lacks skylights, it receives ample illumination from the window walls at either end and is pierced at midpoint by a stair with glass treads and risers leading to the light-filled pavilion above.

In the pavilion, the view dramatically expands in all directions. "You can detect the change of seasons just by the atmosphere of the light coming into the house," Phifer points out. To reduce glare, he designed a series of aluminum-mesh screens that are manually operated on the pavilion's east, south, and west faces, and fixed on the north elevation. As further protection from the sun, Phifer mounted an upper register of screens directly above the first level along the south. When the shades are closed, the pavilion reads as a serenely articulated box, with a concatenation recalling the linear rhythms of an Italian palazzo. When the screens are rotated, they establish a peculiar dynamism—like square sails on a landlocked ship. "The light is cut 70 percent when the shades are shut," Phifer claims. "And since the windows and skylights in the ceiling of the pavilion are operable, the room gets a lot of natural ventilation during hot days."

In order not to obstruct the views, the interior designer, Muriel Brandolini, arranged low-slung geometric seating around the living room's fireplace. Browns, reds, and oranges dominate in both living and dining areas, with a few pieces, such as sculptural rocking chairs designed by Ron Arad, added for pizzazz. "The space was beautiful, but felt cold," says Brandolini. "I wanted to make it warm and livable—not austere."

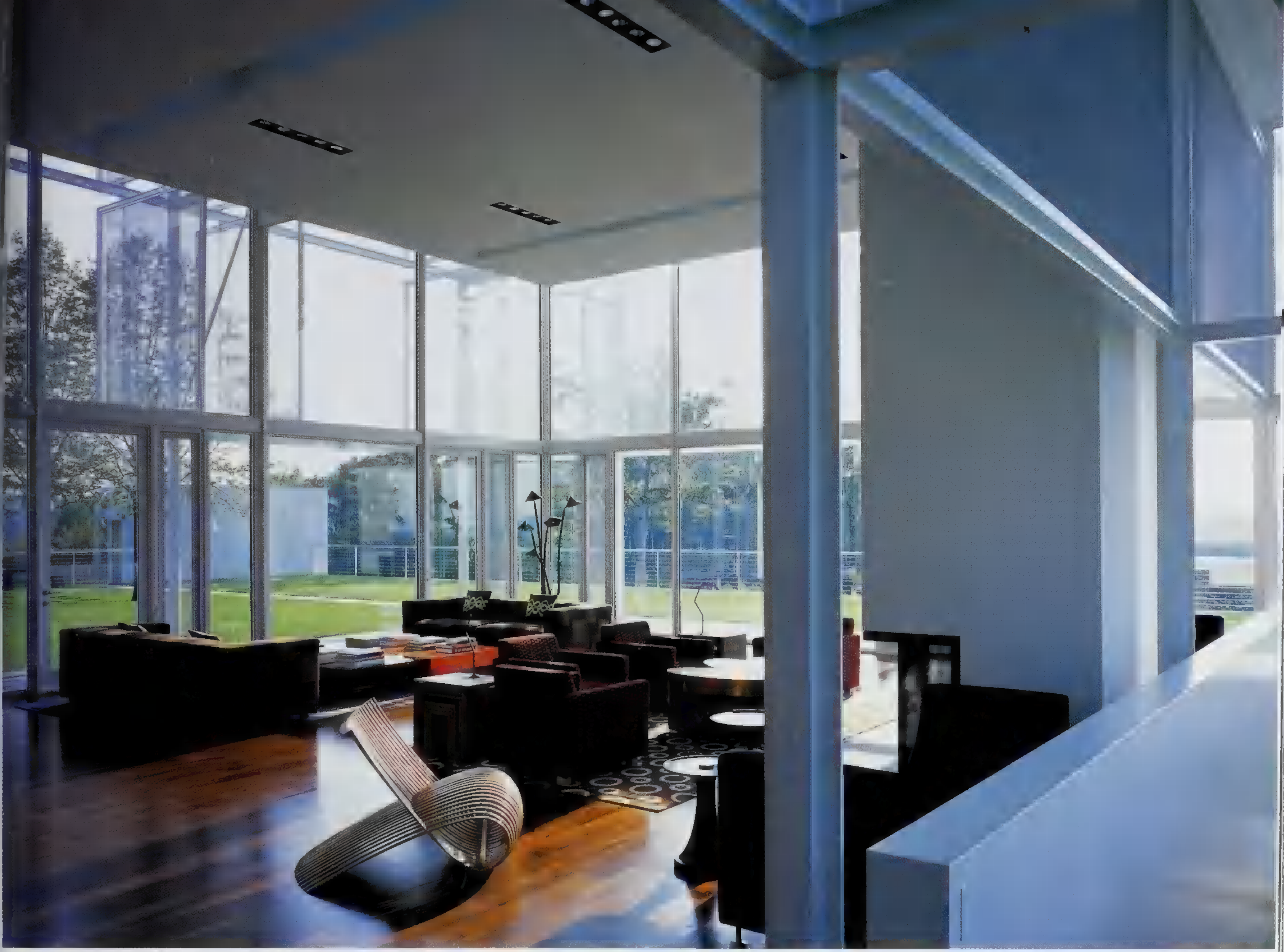
With its earth tones inside and carefully tilled landscape outside, the house represents a thoughtful effort to integrate the themes of nature and culture, while keeping the two distinct. At the same time, the house authoritatively melds two architectural vocabularies, where Classical principles of proportion, scale, and rhythm carefully control Modern materials such as concrete, lightweight steel, and glass. ■

Sources

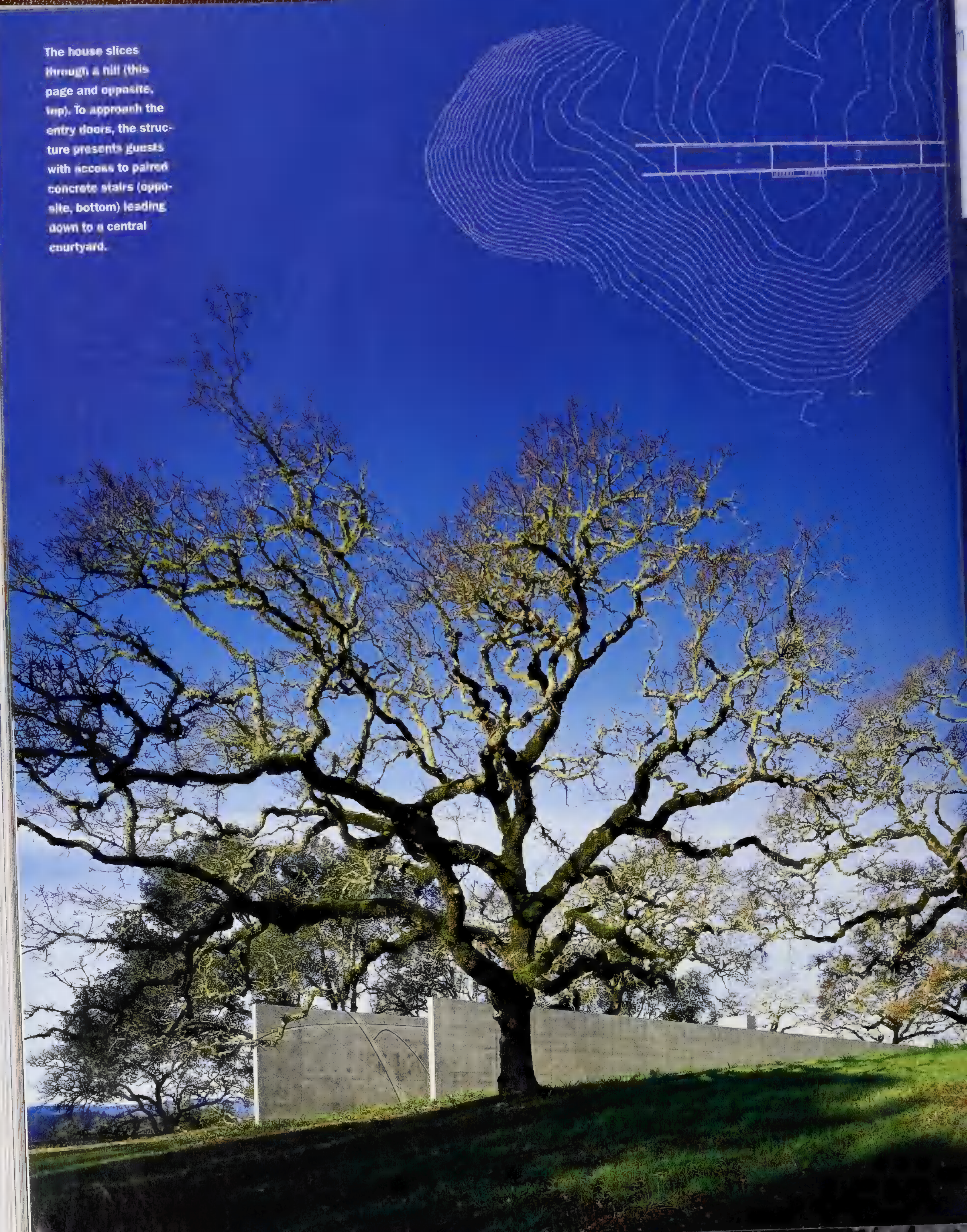
Garden roof system: *American Hydrotech*

Shades: *Cascade Coil Drapery*

WWW For more information on the people and products involved in this project, go to Projects at **www.architecturalrecord.com**.

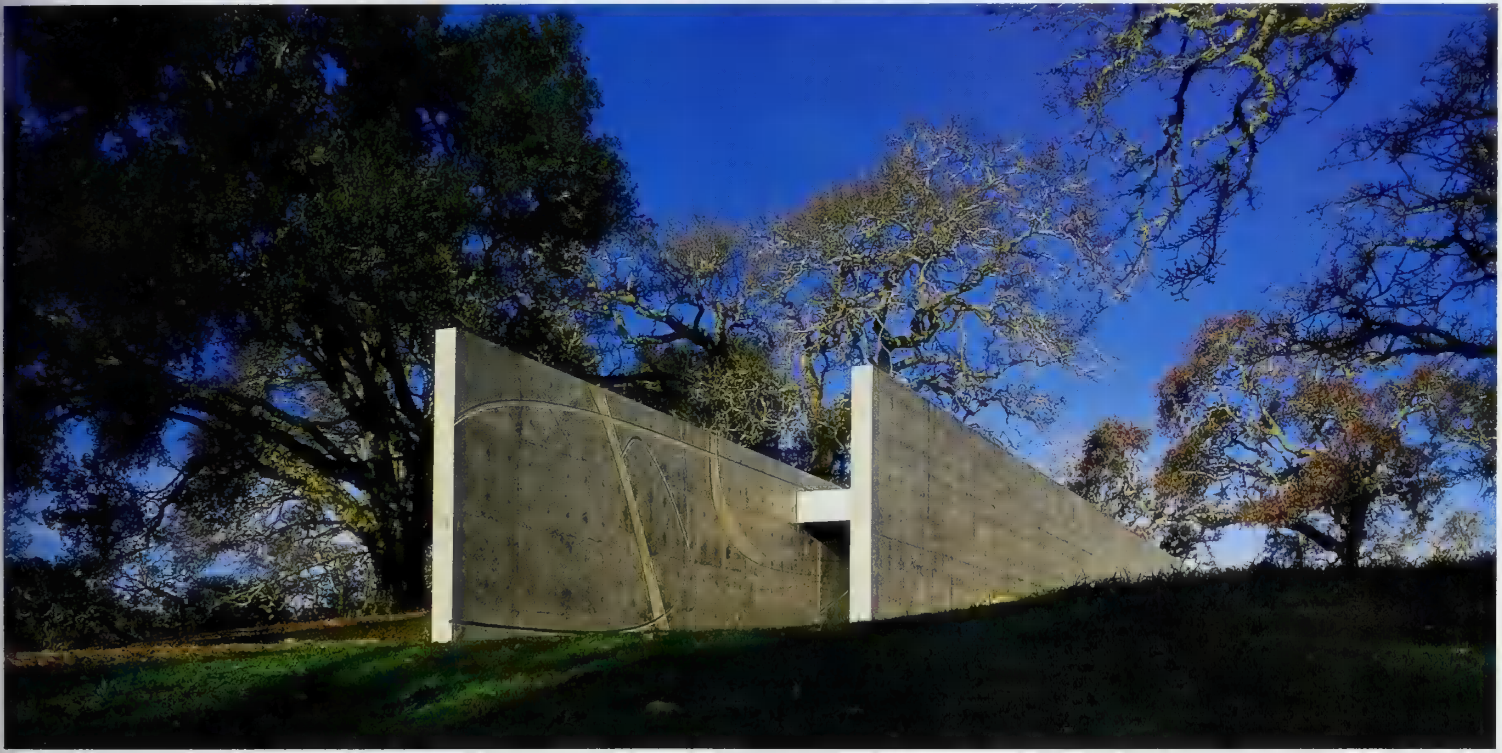


Visitors enter the living and dining pavilion from a small entrance located in the northeast corner (opposite, left and right). One of two narrow stairs leads to the level below. From the living room (above) one sees the tower of the lower-level master bedroom (near right). On the opposite side of the lower level, a glass-ceilinged breakfast room adjoins the kitchen and overlooks a reflecting pool and terrace (far right).

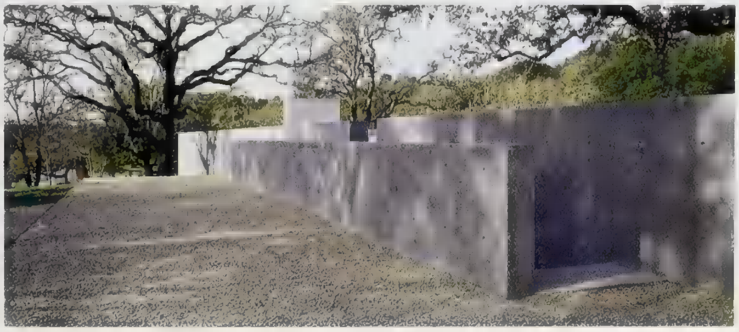


The house slices through a hill (this page and opposite, top). To approach the entry doors, the structure presents guests with access to paired concrete stairs (opposite, bottom) leading down to a central courtyard.

Jim Jennings carves into a California hillside, setting his VISITING ARTISTS HOUSE in a landscape rich with sculpture



By Clifford A. Pearson



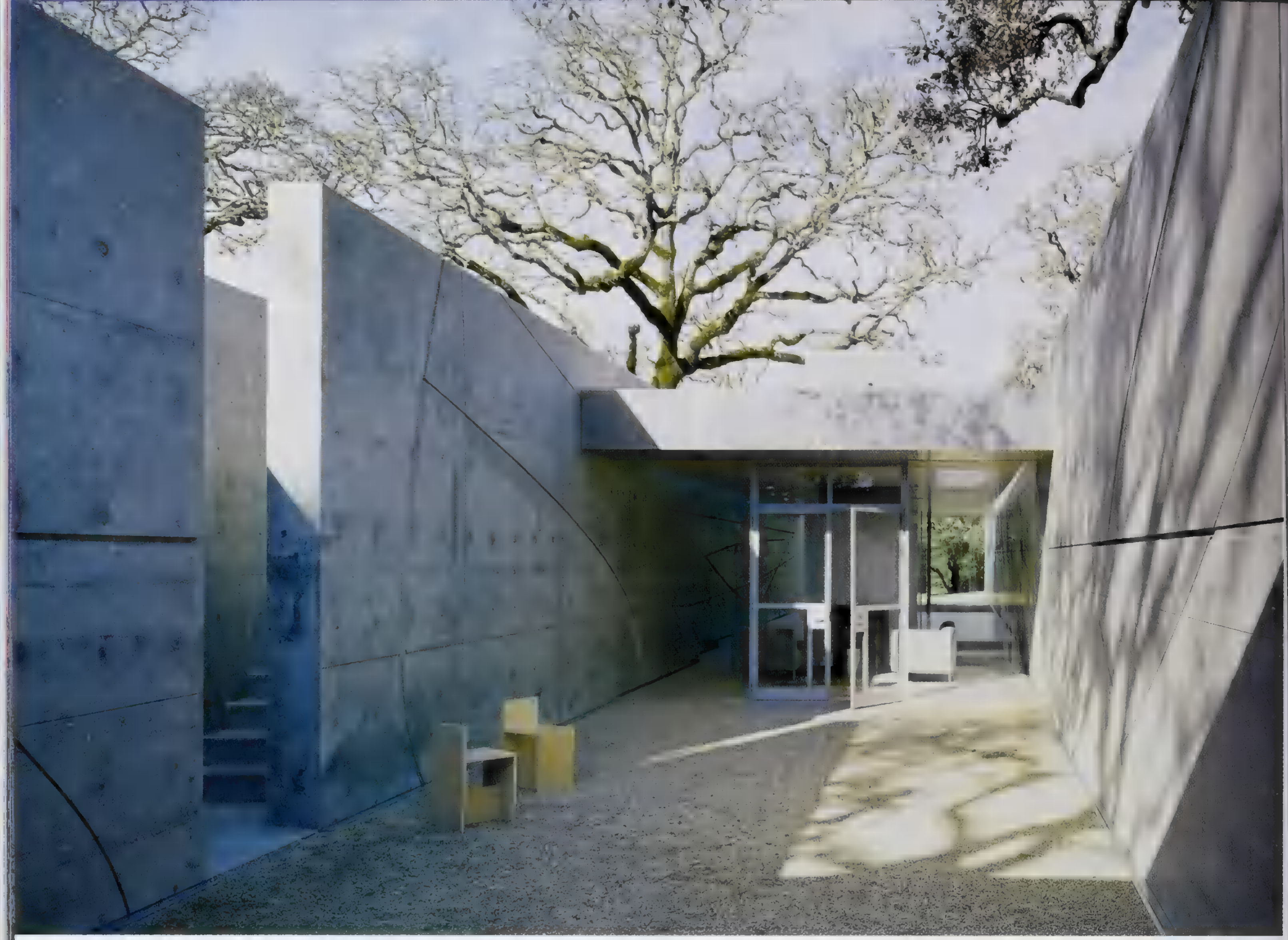
Steve Oliver calls it a ranch, but it's art he's raising—not cattle. A building contractor who sits on the board of trustees of the San Francisco Museum of Modern Art, Oliver has animated the grounds of his Sonoma County weekend estate with sculptures by Richard Serra, Robert Stackhouse, Bruce Nauman, Ellen Driscoll, and others. Instead of merely collecting pieces, he commissions them specifically for the ranch, and they tend to be big and architectonic. The Serra, for example, consists of six pairs of forged steel "dice" that tumble down a hillside and through a meadow, while the Nauman is a ½-mile-long concrete stair that climbs another hill. So it would be easy to view the small guesthouse designed by Jim Jennings for the property as another sculpture, a piece of art where people can stay for short periods.

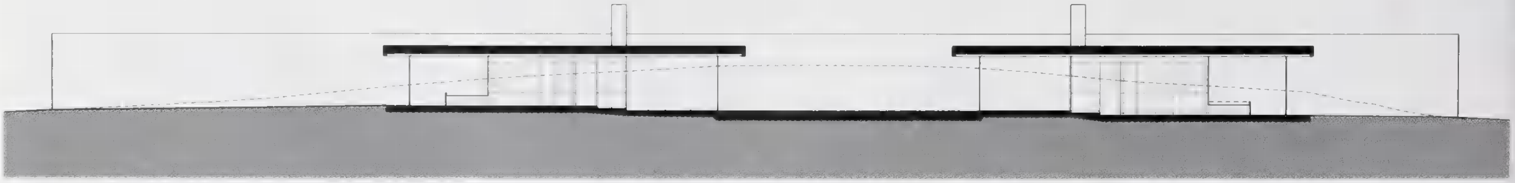
At first glance, the house confirms that notion. Like the Serra and the Nauman, it engages the land in a visually intriguing way: Two poured-in-place concrete walls slice through a gentle hill and carve out strictly prescribed spaces for indoor and outdoor living. Instead of running parallel, the walls creep slowly together, creating a slightly forced perspective that directs one's view to Stackhouse's 99-foot-long surfboardlike sculpture. How could an architect do anything here but make a statement that says *ART*?

Jennings, though, created a residence, not a live-in sculpture. Designed for visiting artists to occupy while they work on commissions for the ranch, the 1,700-square-foot house provides two small suites, each with its own living room, kitchenette, bath, bedroom, and private terrace. A shared courtyard between the two units separates and connects them.

The simple plan generates a rich set of spatial experiences, beginning with a modest yet mysterious entry sequence that takes visitors down a pair of narrow outdoor stairs to a gap in one of the concrete walls. From here, you enter the central courtyard and see, for the first time, that the inside surfaces of the 14-inch-thick concrete retaining walls are incised with great curving lines extending from one end of the house to the other. The

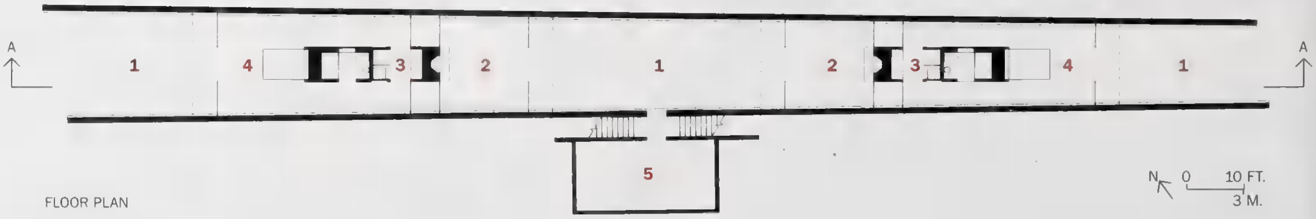
Project: *Visiting Artists House, Geyserville, California*
Architect: *Jim Jennings Architecture—Jim Jennings, principal; Michael Lin, Cheri Fraser, Troy Schaum, Paul Burgin, Les Taylor, May Fung, project team*
Consulting architect: *Tim Perks*
Consultants: *Gary Hutton Design (furniture); Andrea Cochran (landscape); Dan Dodt (lighting)*
General contractor: *Oliver & Co.*



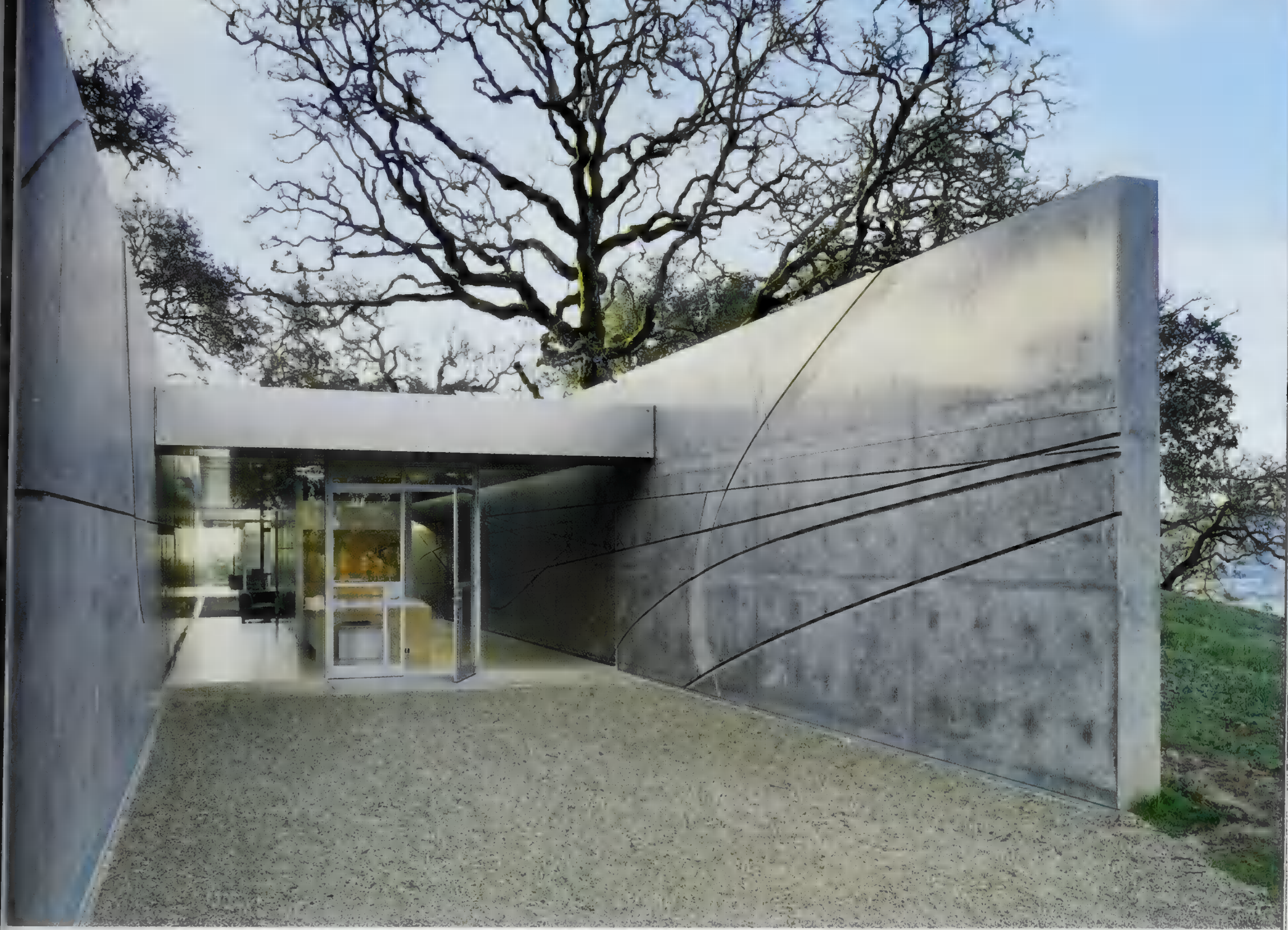


SECTION A-A

1. *Courtyard*
2. *Living*
3. *Kitchenette*
4. *Bedroom*
5. *Mechanical*

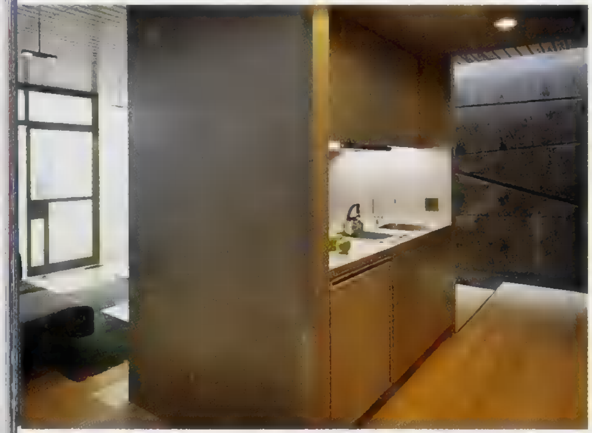


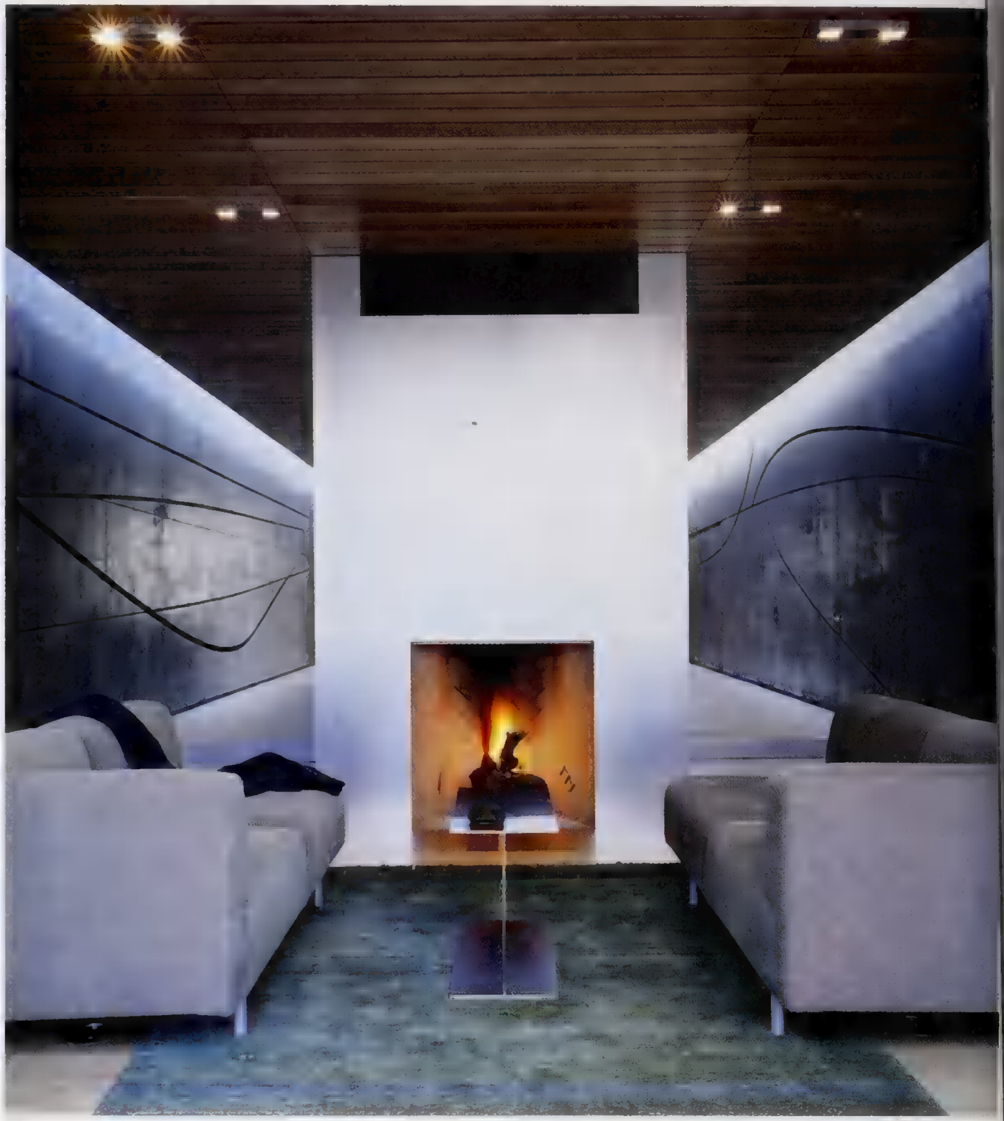
FLOOR PLAN



Each living pavilion (above) is a simple structure of glass curtain walls, steel cross beams, and metal roof decking, set between poured-in-place concrete walls. To accommodate David Rabinowitch's artwork, Jennings used a fine aggregate in the concrete and added a 4-inch surface without reinforcing bars. The entry stairs (near right) lead to a central courtyard (opposite). Guests can also access pavilions from private terraces (above and far right).

The bedroom (below), kitchenette (bottom), and living room (right) stand free of the concrete walls. Mechanical shades on the glass end walls and aluminum screens (not shown) that can fold out from the service core, provide privacy when desired.





cuts—3,000 in all—are the work of David Rabinowitch, a New York City artist who used the 207- and 209-foot-long walls as his canvas.

Between the concrete walls, a pair of remarkably light glass-and-steel pavilions seem to float in their own world yet remain connected to the rest of the ranch by views of a pond to the west and the Stackhouse sculpture to the east. Narrow skylights, just inside the retaining walls, wash Rabinowitch's looping, geometric art in daylight and separate the house's key elements—concrete walls, wood-slat ceilings, and maple floors—from each other. Aluminum-clad enclosures for the kitchenette and bath define a 6-foot-wide swath down the center of each pavilion—reinforcing the impression of elements slipping past, but not quite touching, one another.

"The house has a pristine clarity to it," says Oliver, who enjoys the back and forth of the creative process and has worked with Jennings on a number of projects, including a house in San Francisco [RECORD, April 1998, page 102]. The architect designed the guesthouse more than a decade ago, before Oliver thought of bringing a sculptor into the project. Then the plans sat on the back burner for several years. When the job got going again, Oliver realized that the clarity he so admired in Jennings's design could support the energetic slicing and carving of Rabinowitch's work. So architect and artist met and found areas of common interest.

"The house is all about positioning—in the land and toward the views of the ranch," explains Jennings. "David responded to that immediately and to the perception of space and perspective that it engenders," he adds. Indeed, Rabinowitch's expansive lines, which run indoors and out, challenge the visitor's sense of scale and place but always connect the house to the natural setting. Rabinowitch, whose work often involves cuts in plaster, appreciated the challenge of carving in concrete and felt drawn to Jennings's muscular plan. "It was never my intent to ornament his spaces," but to contribute to "a totality," says the artist. While Jennings's design remained essentially intact throughout its 10-year gestation, the architect made a few changes in response to the art—adding the skylights and 4 inches of depth to the concrete walls for the carvings.

The house requires a certain discipline from guests—it isn't the sort of place where you can just leave your clothes lying about—but it's not a residential version of a Donald Judd box either. Its outdoor rooms offer seductive areas to enjoy a meal. And at night, when illumination from fiber-optic lights at the base of the retaining walls spills into the landscape, you can imagine yourself staying here awhile. To be so lucky, though, you'd have to get Steve Oliver to commission a sculpture from you. ■

Sources

Steel-and-glass doors: *Hope's*
Wood ceilings: *Rulon*
Ceramic mosaic tile: *Dal-Tile*
Pendant light: *Steng Licht*
Refrigerator: *Sub-Zero*
Stove: *Gaggenau*
Motorized shades: *Mechoshade*

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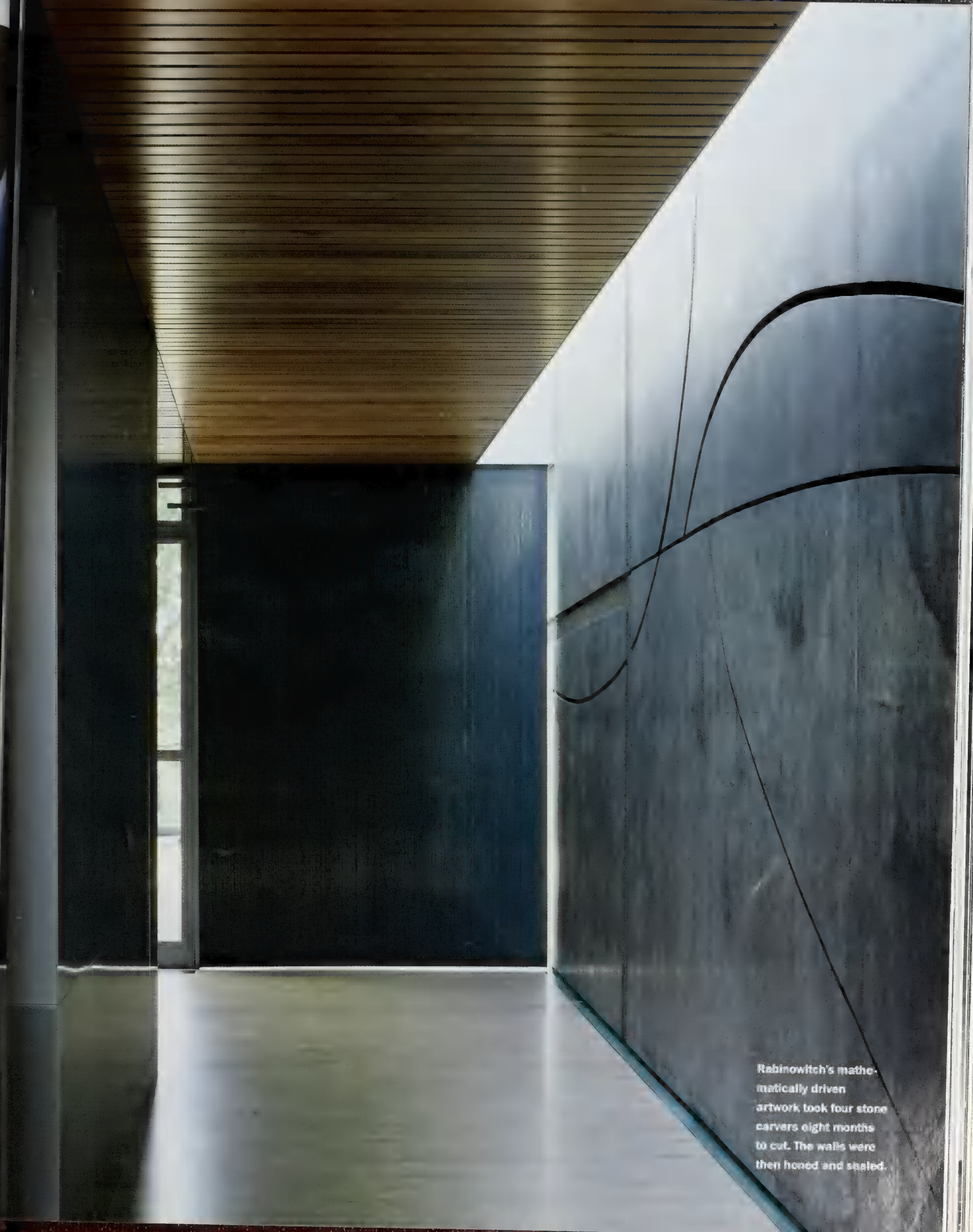


Rabinowitch's mathematically driven artwork took four stone carvers eight months to cut. The walls were then honed and sealed.

Jarmund/Vigsnæs transcends the world of suburbia, perching its **RED HOUSE** on a wooded slope

By Peter MacKeith

Monolithic in form and color, the Red House rises dramatically above a steeply sloped forest hollow in Norway's Lysaker River Valley. Yet, as wild as this topography may appear, the house is barely 6 kilometers west of the city center of Oslo (metropolitan population nearly one million), just within the periphery of the city's Røa suburb. The setting is actually a post–World War II development of closely spaced single-family houses with pitched roofs and colorfully stained wood siding.

Like many residential designs by Oslo-based architects Jarmund/Vigsnæs, the 1,830-square-foot Red House emerged productively from the difficulties of its site: a narrow quarter-acre parcel that extends over the edge where residential allotments meet the river's sloping east bank. Though existing homes stand nearby, pine and fir trees shield the structure's northern and western exposures, dominating its views—and giving the illusion of a place secluded in the forest.

One of the nearest houses, a gabled, cream-colored suburban dwelling, was the childhood home of the Red House's owner, who inherited part of his parents' rear garden with the sale and subdivision of the property. The decision to build on a parcel so potentially infused with memory was utterly pragmatic, but the owner sought out an architect who could address both neighborhood and landscape. Jarmund/Vigsnæs clearly respected the existing order, but looked to nature for many of its cues.

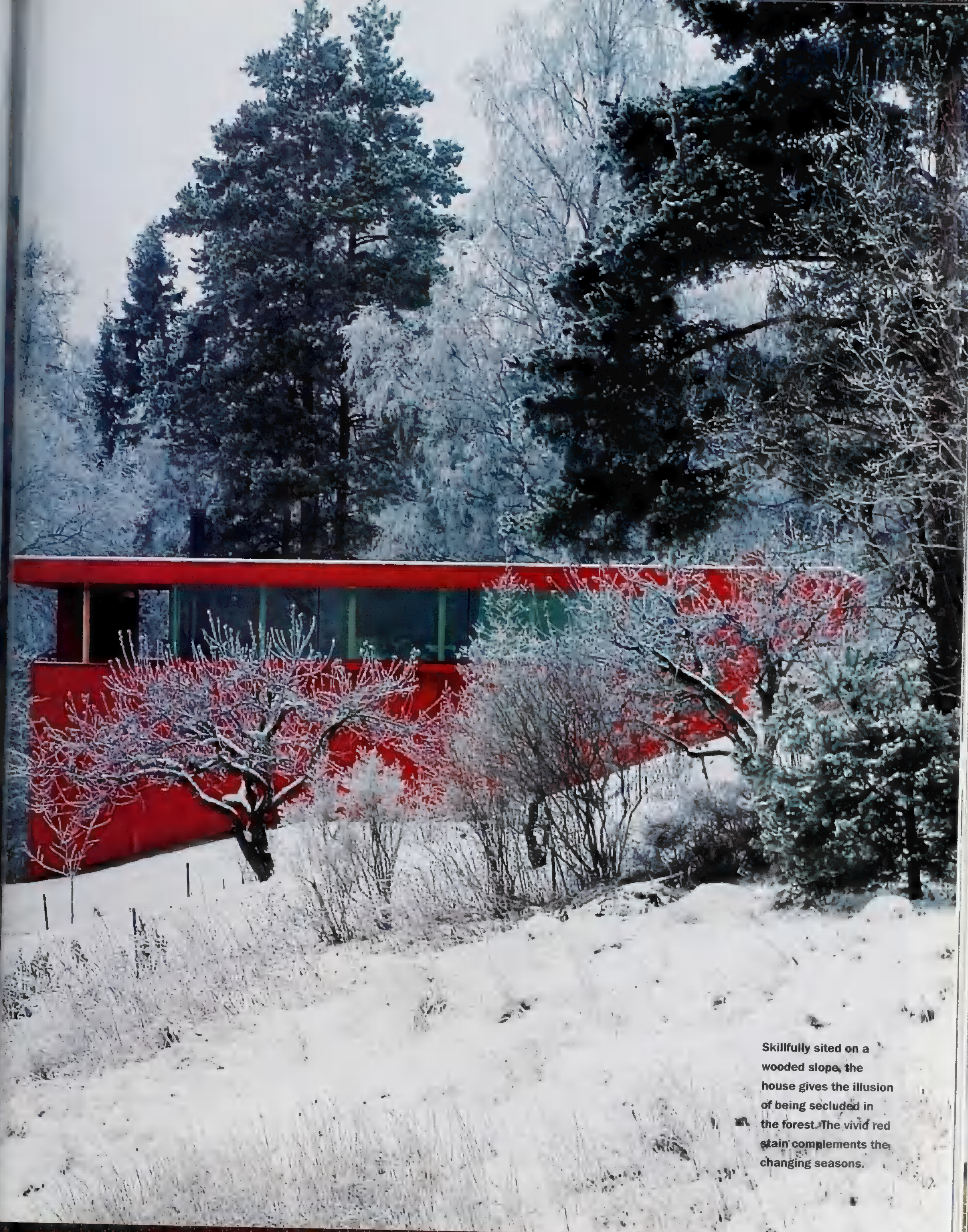
"The relationship [between architecture and nature] is a main theme of our practice," explains partner Einar Jarmund. The firm has been fortunate to have rather extraordinary sites for most of its commissions [see RECORD, July 2002, page 178]. And they try, he says, "to explore each setting for each different house through the plastic sculpting of volumes."

Although such "plastic sculpting" is not fully apparent on the narrow approach from the street to the Red House's diminutive front porch and door, it is immediately clear that the building's thin rectangular volume stands perpendicular to the river below it, accentuating the fall of the slope. This siting—along with a massing that initially reveals only one

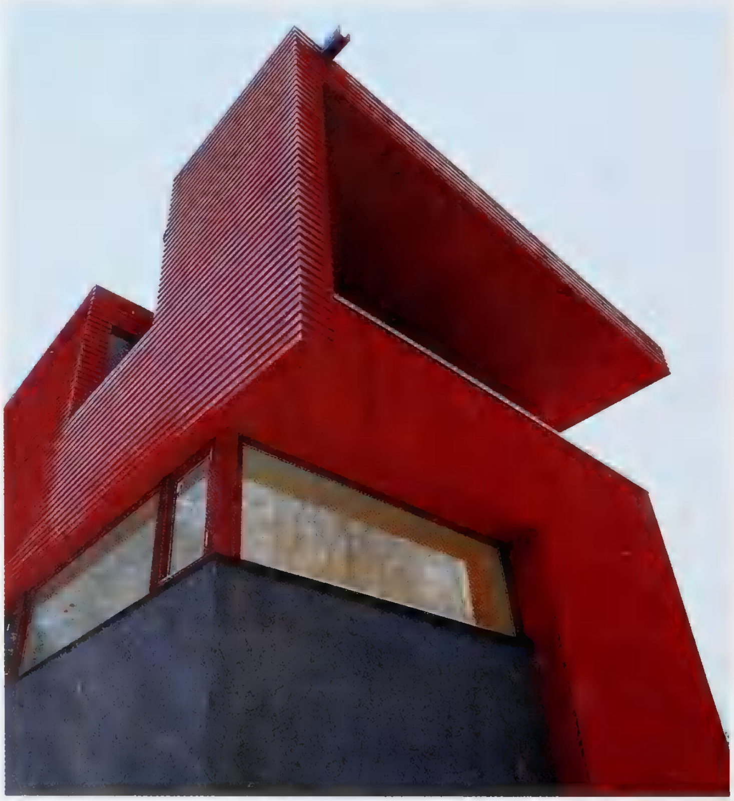
Peter MacKeith, associate dean of the School of Architecture at Washington University in St. Louis, writes frequently on Nordic architecture.

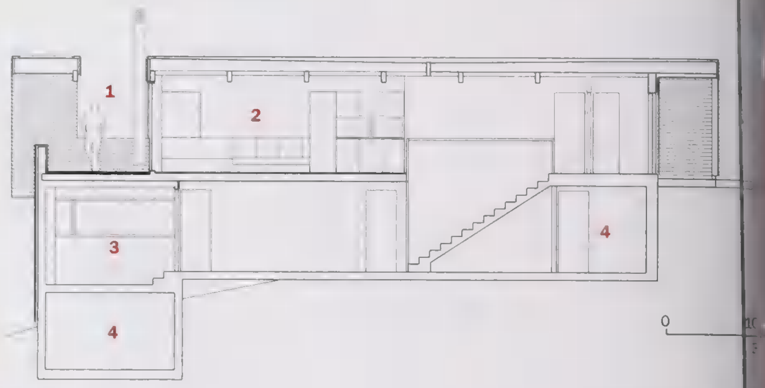
Project: *The Red House, Røa, Norway*
Architect: *Jarmund/Vigsnæs—Einar Jarmund, Håkon Vigsnæs, partners in charge; Roar Lund-Johnsen, project architect*
Engineer: *Walter Jacobsen*
General contractor: *Gunnar Johansson*

PHOTOGRAPHY: © NILS PETTER DALE/NISPE@DATHO.NO



Skillfully sited on a wooded slope, the house gives the illusion of being secluded in the forest. The vivid red stain complements the changing seasons.





SECTION A-A

1. *Terrace*
2. *Kitchen*
3. *Playroom*
4. *Storage*

of the structure's two stories—helps make the house a good neighbor, minimizing its street presence among existing homes. These conditions also intensify the unfolding drama of inhabiting such terrain.

Indoors and out, sculptural qualities emerge through the juxtaposition and nesting of L-shaped elements in plan, section, and elevation—in a range of scales, materials, and textures. The resulting effect is a continuous sequence of surprises. Against a tight interplay of interior forms, the external workings of the house—a strong, singular, vibrantly colored volume—conveys its designers' confident energy.

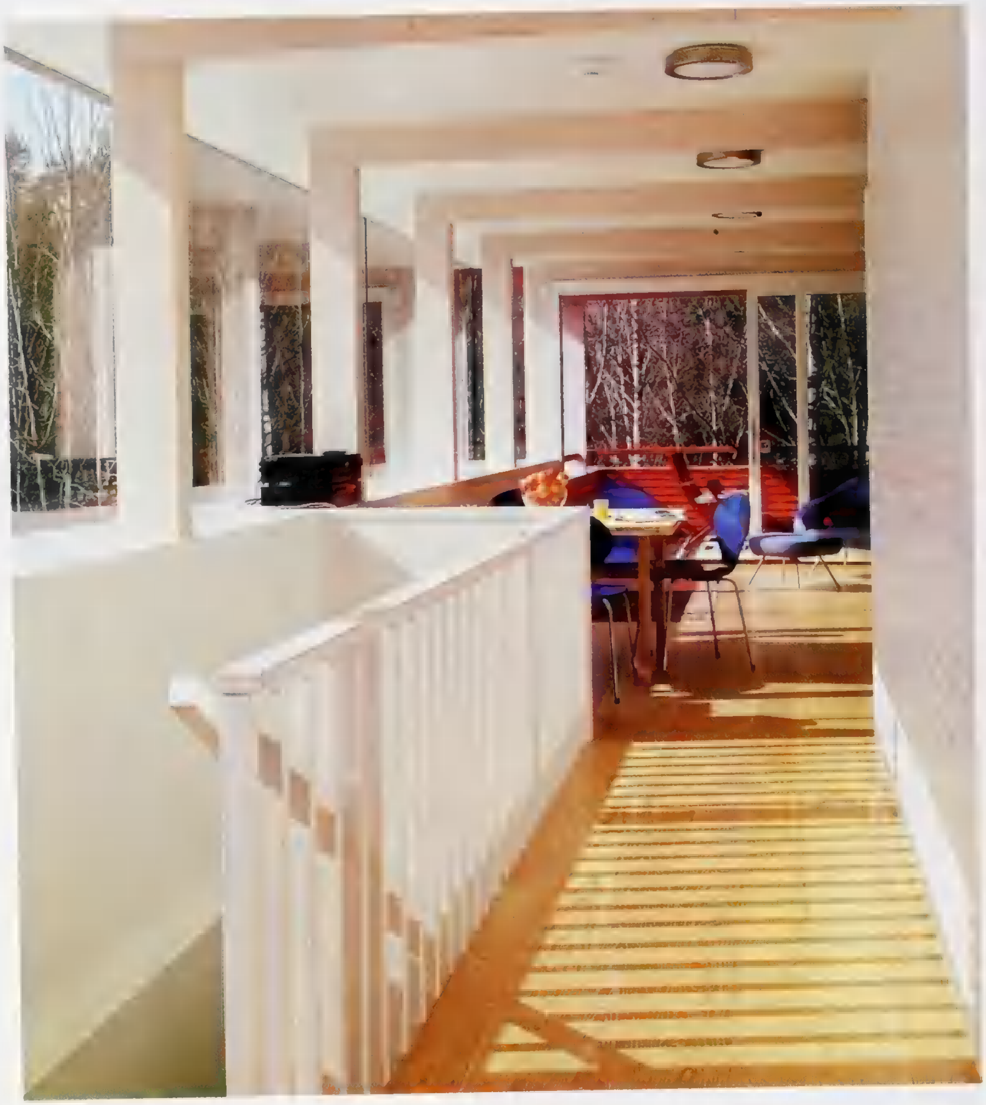
Planned with simplicity and economy for a family of five, the Red House is essentially organized "upside down"—with the parents' bedroom and the kitchen, dining, and living areas on the entry floor, and the sons' three bedrooms, plus a family room, on the lower level. "We conceived of the house," says Håkon Vigsnæs, "as a covered balcony, or terrace, filled with light—connected to the ground and to the views out through the trees."

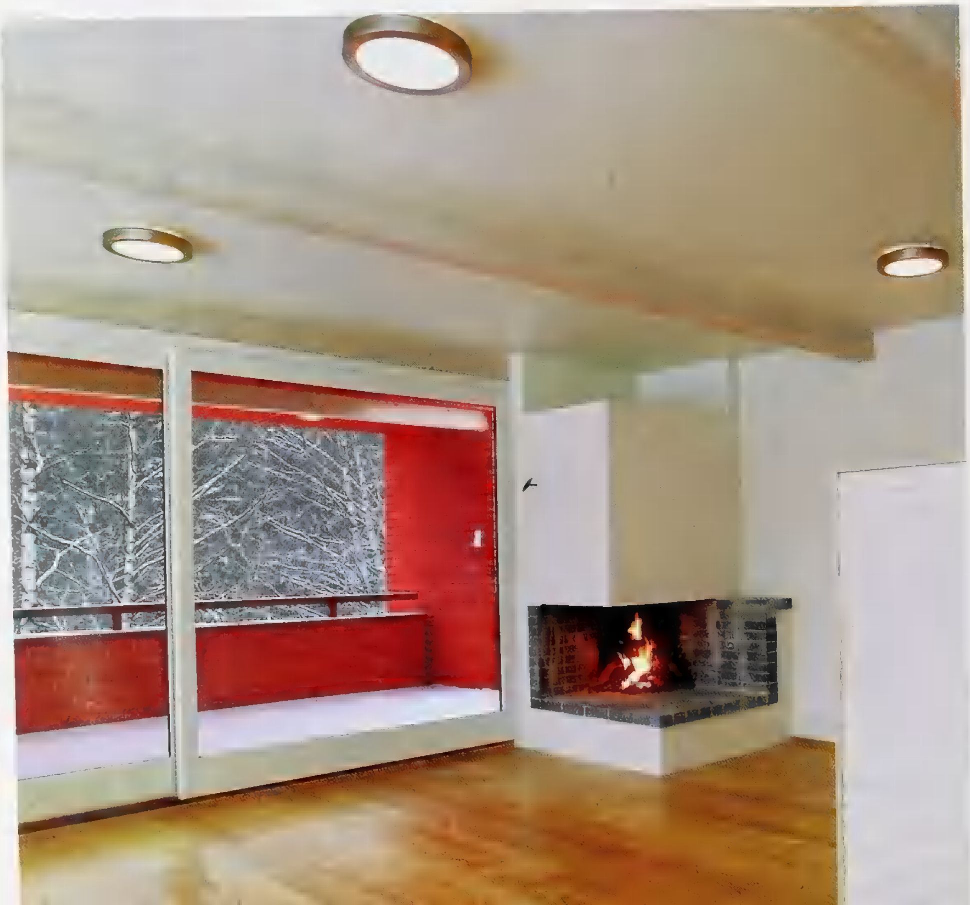
While orientation and natural illumination are primary considerations in any good architecture, they characterize this project in the variety and precision of its fenestration, reinforcing relationships between inside and out. Beyond the entry vestibule, views open to the south and west through butt-joined glass panels and wall-size sliding glass doors—comprising a veritable light box—leading out to a covered terrace. Downstairs, north-facing strip windows at desktop height border the children's bedroom study areas, while windows facing north and west wrap the family room's exposed outer corner.

In the the main living area, seven laminated wood bents, extending along the light box and onto the terrace, set the rhythm. Although the construction quality is high, interior finishes and detailing remain minimal: simple built-in cabinetry, white paint, and ash flooring. The calm restraint and ample daylight impart a much-appreciated sense of quietude (in counterpoint to the three young boys downstairs), openness, and intimacy.

Of course, any discussion of the Red House leads inevitably to its vivid color. Make no mistake: This house is red, its stained fir vibrantly so. Anything beyond white or a material's natural hues is rare in Jarmund/Vigsnæs's residential work. But here, the architects cite the temperaments of the clients as inspiration. Of course, this claim may be a herring of the same hue: Red is actually part of the owner's name and also of the location (in the Røa, or red, suburb), but to say more would break

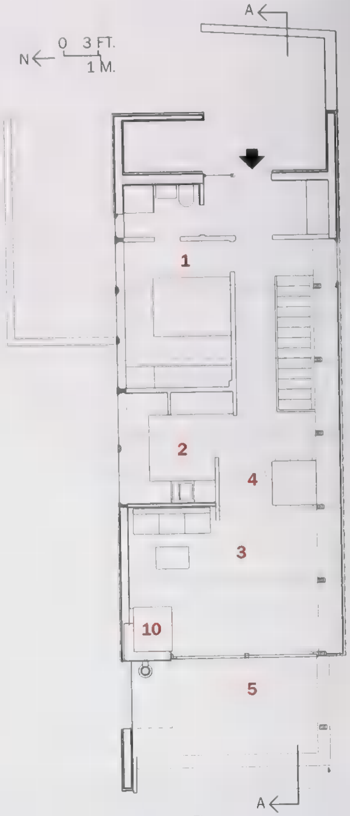
At its entry (left), the house is understated, despite its bold color, revealing only one of its two stories. But sculptural qualities soon become apparent as "wall" folds into "roof" (above and opposite, bottom), as horizontal boarding merges into vertical, and as concrete gives rise to glass. The precision and variation of the fenestration, and the integration of decks, reinforces the connection between the interior and the landscape.



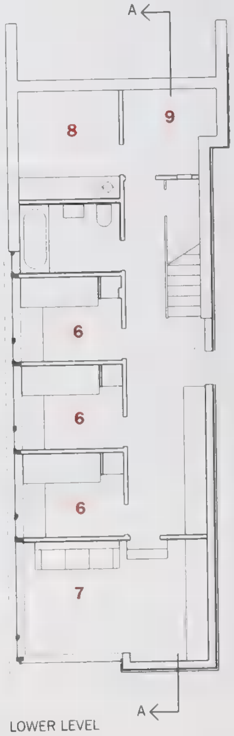


Laminated wood bents set a rhythm for the main living space (left). L-shaped forms, interlocking and nesting in plan and section and in a variety of materials, textures, and scales, shape the interior (left and below).

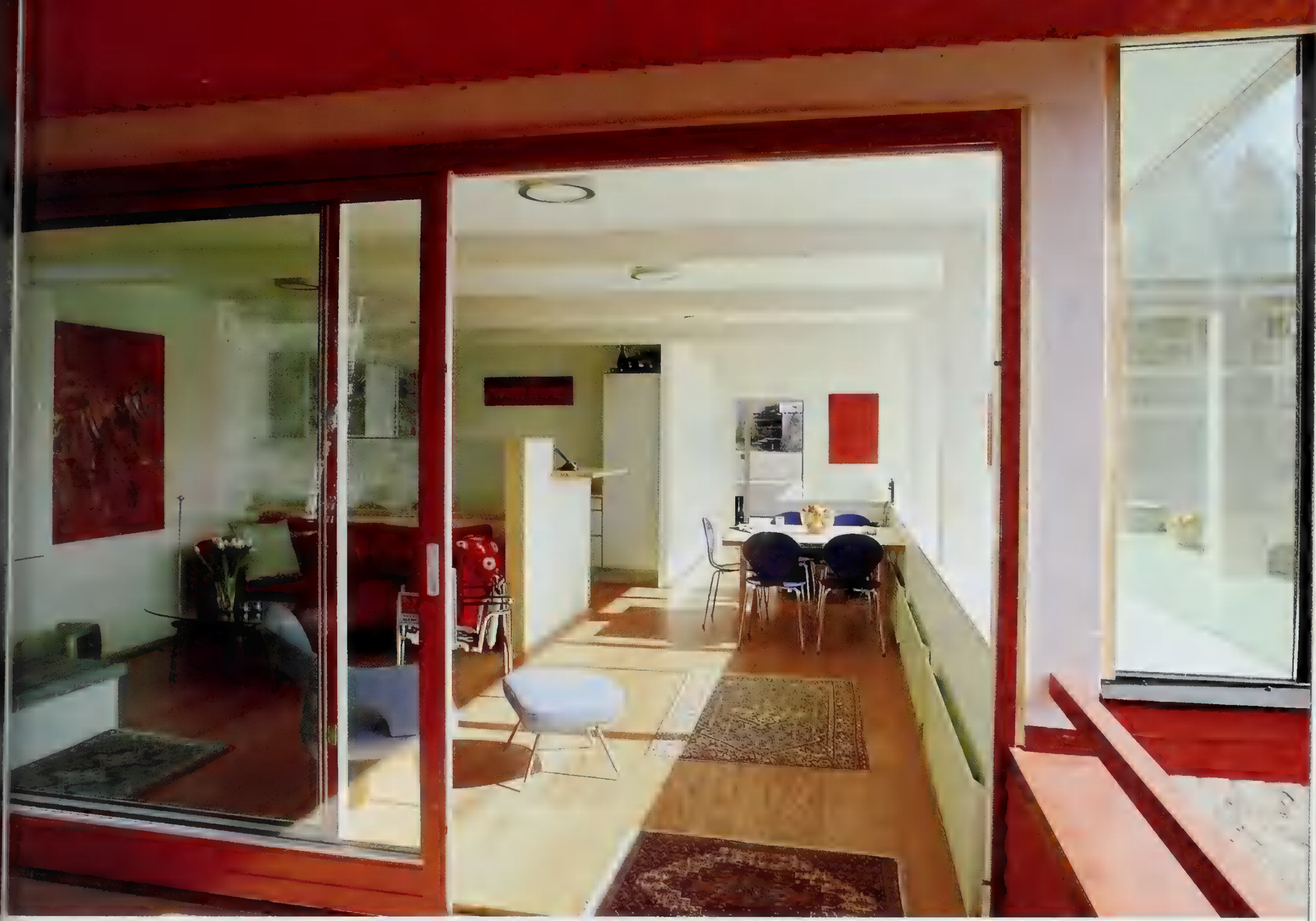
1. *Master bedroom*
2. *Kitchen*
3. *Living*
4. *Dining*
5. *Terrace*
6. *Bedroom*
7. *Playroom*
8. *Laundry*
9. *Storage*
10. *Fireplace*



ENTRY LEVEL



LOWER LEVEL



the owner's desired anonymity. If the choice of so vivid a color surprised the clients initially, they now understand it as highly appropriate to the context—suited literally and figuratively to its venue and its occupants.

Since the 14-person firm of Jarmund Vigsnæs formed in 1995, its work has increased in scale and complexity. Even while working currently on major buildings for the Norwegian ministry of defense—a new headquarters within Oslo's Akershus fortress—and a research institute in northern Norway, the practice continues to explore issues of domesticity. Emergent Nordic architects, Jarmund and Vigsnæs, both 40, are quick to acknowledge intellectual and spiritual allegiance to Sverre Fehn and Per Olaf Fjeld, but they are also committed to developing their own language of form—striving, they emphasize, for "specificity to each local situation."

The Red House confidently condenses such particularity into a glowing home that appears both intimate and monumental, standing in contrast to the changing seasons on its quarter acre of spectacular woodland slope. ■

Sources

Exterior cladding: *Maxbo (Norwegian fir)*

Roofing: *Norsk Stål (corrugated insulated metal)*

Shingles: *Icopal*

Windows: *H-Vinduet (painted wood)*

Masonry tile: *AS Steinhuset (St. Hubert limestone)*

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At verandas and deep-set windowsills (this page), parts of the exterior turn inward, juxtaposing flashes of red with calm interior finishes—ash floors and white paint—bathed in daylight.

In the lush collage of Portugal's northern landscape, Alvaro **Siza** deftly unites the Baroque and the contemporary at **QUINTA SANTO OVIDIO**

By David Cohn

"Architecture, if it is not a pleasure, is the worst thing that exists," Alvaro Siza once confessed, battle weary after his struggle to complete the Serralves Museum in his native Porto in 1999. To put aside the cares of such large-scale projects, he took refuge for many years in the restoration of a friend's dilapidated country house, the Quinta (or Estate) of Santo Ovidio, in the Douro region of northern Portugal, some 40 miles east of Porto. During weekend site visits, the architect relished working one-on-one with local stone masons, carpenters, and other craftsmen, and what he describes simply as "the pleasure of making something well."

Set in verdant countryside amid a patchwork of small plots terraced into the hills, the Quinta is the 7.5-acre core of a large farm estate that was probably built in the early 1800s, although precise dates are lacking. Siza, now nearing 70, rarely has time for such small projects, but he was drawn into this one in 1989 by an old friend, a clothing designer, who dreamed of mounting fashion shows in its gardens. The architect took on the reconstruction of the severe, granite-walled main house, the conversion of the former caretaker's cottage into a guesthouse, and the

David Cohn is RECORD*'s correspondent based in Spain.*

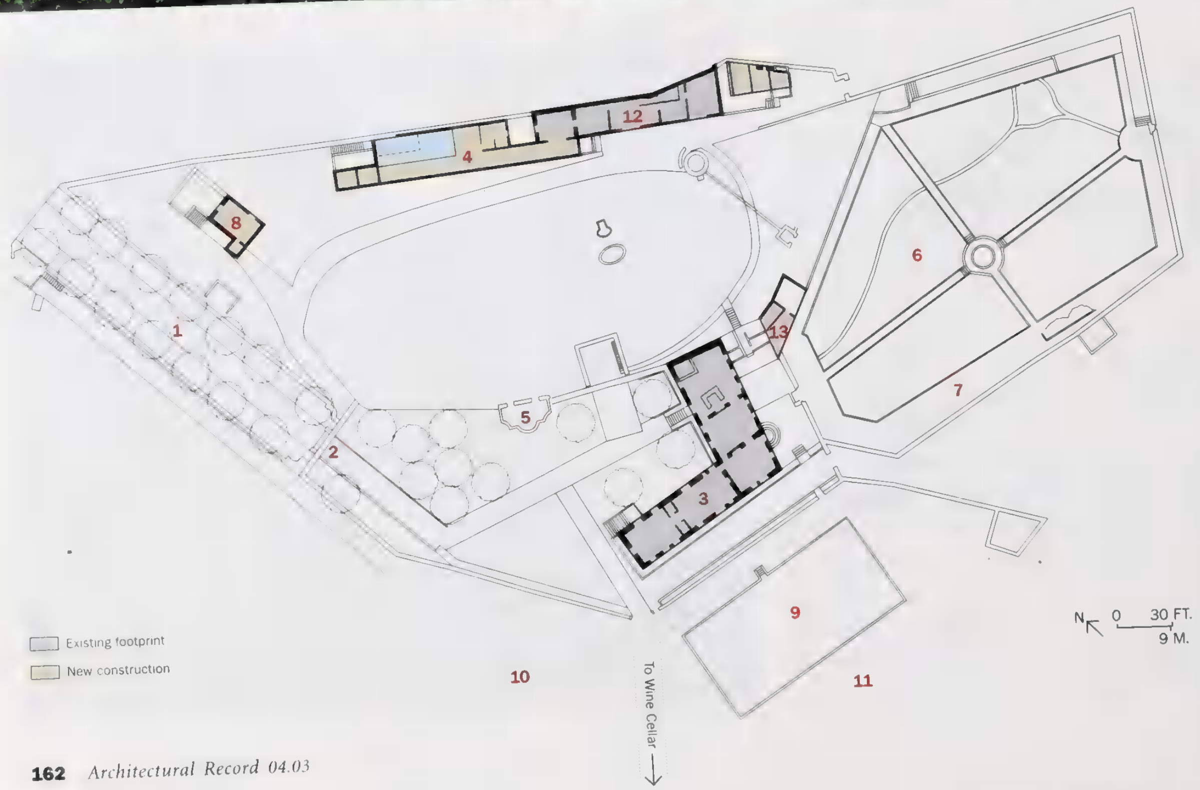
restoration of the grounds. But the work dragged on as the client struggled to finance it, and she was finally forced to sell the Quinta in 1996.

Still in love with the project, she persuaded the architect and new owners, a local manufacturer and his wife, to finish it together. Despite initial skepticism, both sides warmed to the task. The couple added a pool house and, for their daughter's wedding, a chapel—structures allowing Siza to mix his playful formal virtuosity with the place's seductive genius.

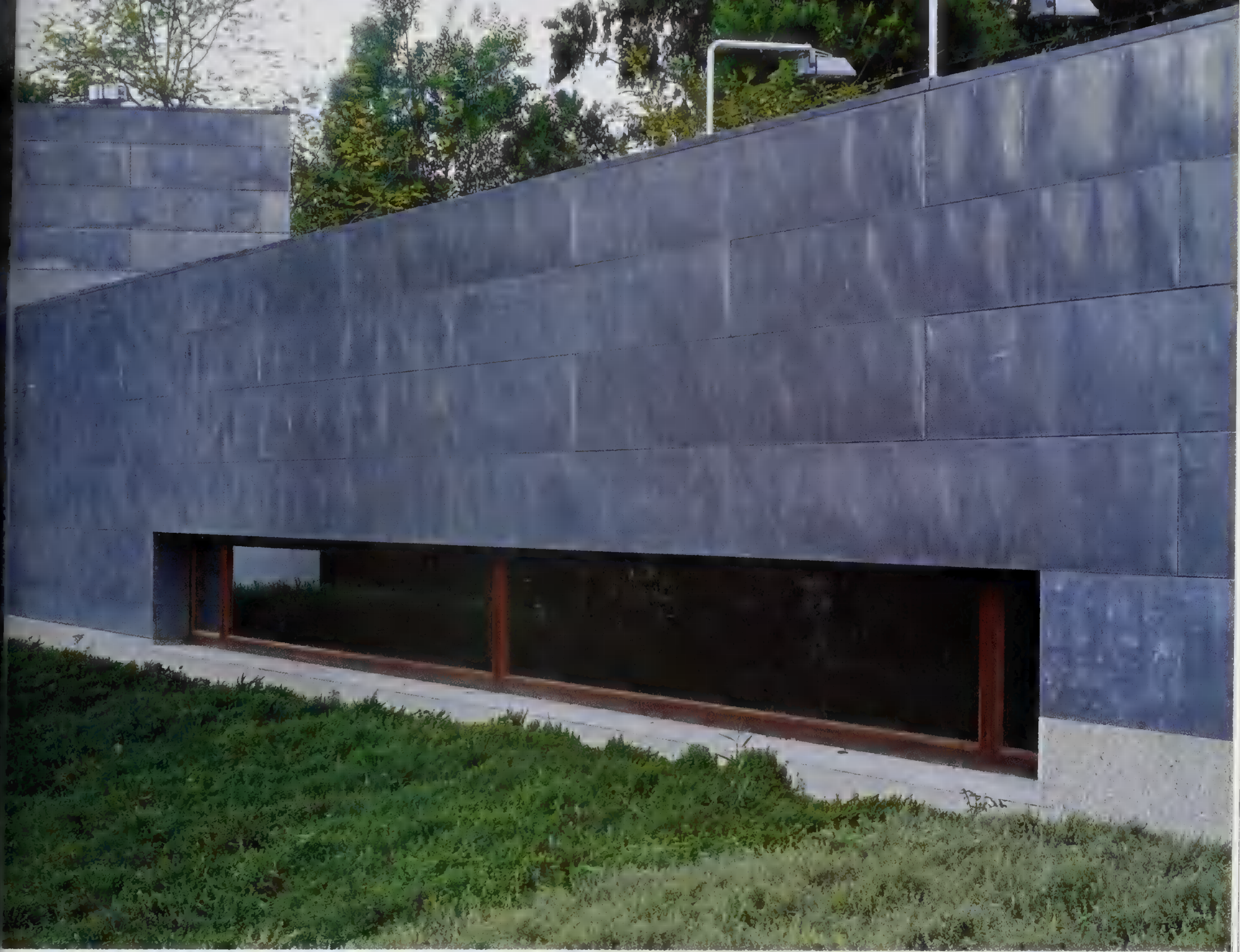
Siza's work on the house and grounds far exceeds a simple restoration, though his hand is seldom obvious. The estate had been abandoned for 20 years and the main house open to the elements. Above a ground floor built as a stable was a warren of corridors and small living quarters. To give the interiors a generous scale, Siza stripped them to the masonry bearing walls. On the upper level, partly embedded in a hill, he created an enfilade of rooms opening successively across an L-configuration: from the entry foyer beside the exterior stair to the original kitchen at the opposite end. On the ground floor, he carved out three bedrooms and a family room. Now an interior stair connects the two levels for the first time.

The architect recreated windows and details using deteriorating originals as models. The rustic simplicity of wide-plank pine floors and ceilings and simple moldings is echoed in sparse furnishings, some

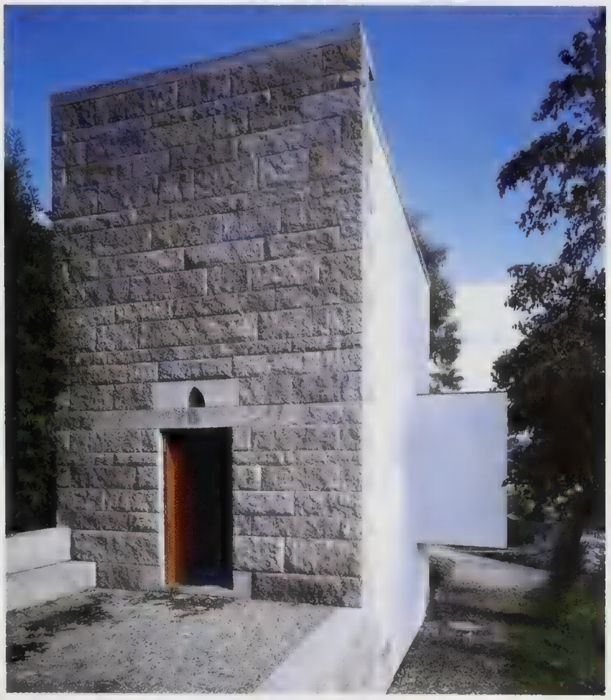
PHOTOGRAPHY: © DUCCIO MALAGAMBA, EXCEPT AS NOTED

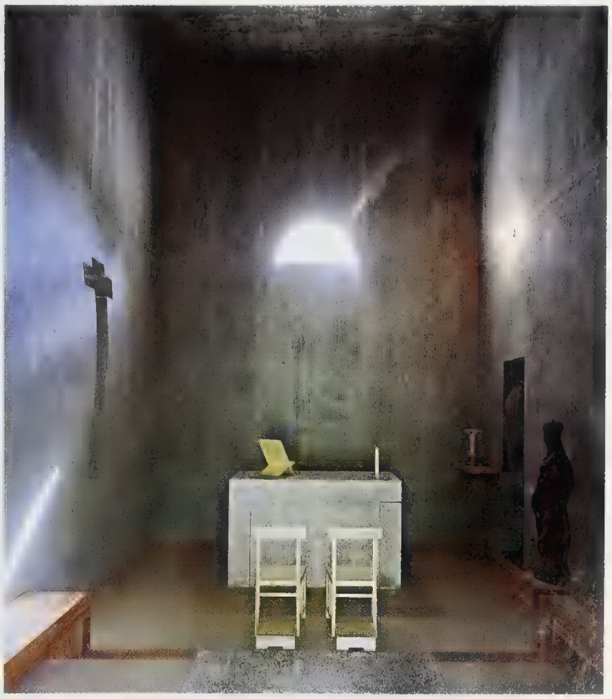


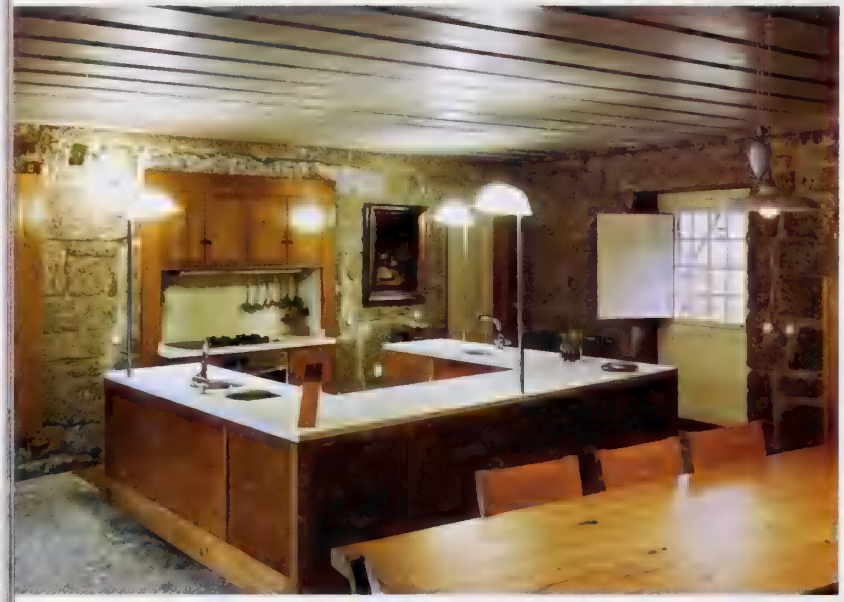
1. *Lane*
2. *Armorial gate*
3. *Main house*
4. *Pool house*
5. *Baroque fountain*
6. *Pleasure garden*
7. *Belvedere*
8. *Chapel*
9. *Tennis court*
10. *Vineyard*
11. *Orchard*
12. *Guesthouse*
13. *Laundry*

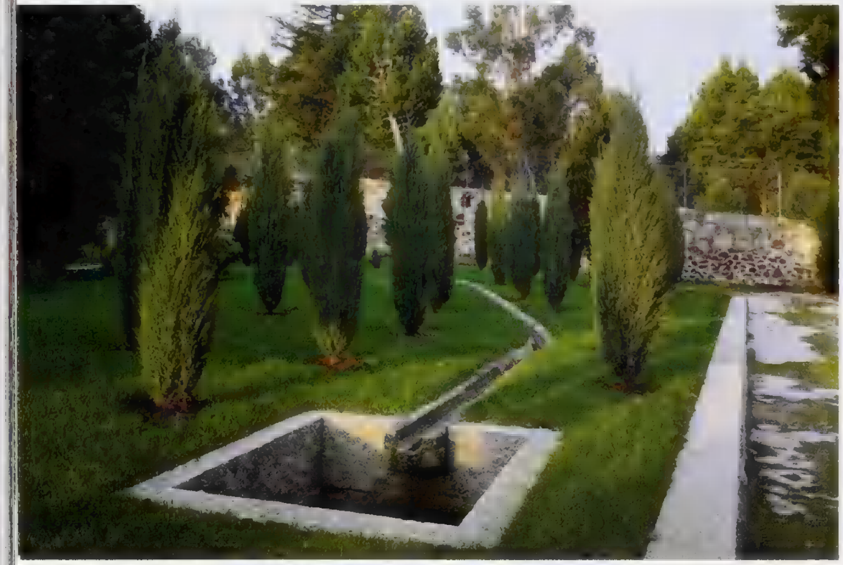


Siza deftly inserted quiet, modern buildings amid eclectic structures in a picturesque setting (opening spread, top). His pool house is adjacent to an existing building, now the guesthouse (opening spread, bottom). Exploiting the contrasting functions of pool house and chapel (above), the architect created a dialogue of formal opposites: His low-lying pool house is clad in zinc, and his vertical chapel in granite (right). Apertures in the chapel walls symbolize the canonical features of ■ church (far right).









The architect restored granite channels (above) through which water flows across the land. Stream-fed laundry basins (right) stand outside the kitchen. In the kitchen (top), Siza restored an original room-size fireplace and granite floors—and added a U-shaped service island topped with flowerlike blue glass uplights on slender stalks.

designed by Siza, including the kitchen table and chairs and the living room's delicate silver chest. In the kitchen, with its original room-size fireplace and granite floors, the architect built a U-shaped service island.

Siza's work on the grounds, in part with landscape architect João Gomes da Silva, concentrated on restoring rather than restructuring original elements, maintaining their exotic mix of the grand and the mundane—from stream-fed laundry basins beside the kitchen to the entry court's monumental Baroque fountain. This project also restored an entry allée of lime trees leading to a ceremonial gate and the fountain, and added an underground garage, tucked behind the fountain's sculpted backpiece. For the formal gardens in back of the house, such elements as granite channels, carrying gurgling water across the lawns, were revived.

The architect sited his new pool house and chapel on a rolling lawn north of the main house, a relatively casual setting above the entry and the rear garden's formal terraces. He felt free to use a contemporary vocabulary for these pavilions, though with a certain discretion. The pool house, adjacent to, but independent of, the guesthouse, is clad in zinc. The chapel, rising beyond it to the west, includes many traditional references. Siza exploited the two buildings' contrasting functions to create a dialogue of formal opposites. For the indoor pool, dedicated to the cult of the body, the floor level is submerged in the ground, while the chapel, dedicated to the spirit, rises above the lawns on a platform.

The Quinta's original chapel, a typical feature of such estates, was demolished by an irate 19th-century owner to keep out local devotees of Saint Ovidio, a popular Portuguese holy figure reputed to cure the deaf. (That owner was excommunicated for his pains.) The new chapel stands near the site of the old. Its entry faces away from the house, toward the west, allowing the architect to create an elaborate approach passing under the sacristy's cantilevered (virtually levitated) volume. In each of the chapel's four walls, Siza cut an aperture, playfully symbolizing a canonical feature of the traditional church: The tympanum appears as a small pointed arch over the entry; the apse is represented by a semicircle above the altar; the sacristy's metaphorically open door is suggested by a glass paver in the threshold of its cantilevered floor; and a cross is shown, filtering rays through a translucent pane of alabaster.

In the pool house, the descent to the water brings bathers eye level with the ground outside, through low strip windows. While multiple points of daylight give the chapel unexpected warmth, the atmosphere here is cool and otherworldly. Sun-dappled walls of sky-blue and sand-yellow ceramic tile, inspired by a trip to Mexico and bearing Siza's sensuous sketches of human figures, are tempered by the white marble of the pool and its deck.

As in the Serralves Museum [RECORD, November 1999, page 102], these sculptural pavilions attest to the formal sonorities that arise in the encounter between the architect's work and his native landscape. The gestural, accidental qualities of his forms seem most at home in the jumbled, quiltlike collage of Portugal's terraced fields with their crumbling stone walls and houses, gushing streams, and gentle light. Though Siza has worked across Europe, his inspiration clearly originated here, where the act of building remains intimately connected with the character of the land. ■

Project: *Quinta Santo Ovidio, Douro Litoral, Portugal*
Architect: *Alvaro Siza Vieira—Alvaro Siza Vieira, principal; José Luís Carvalho Gomes, principal in charge; Ashton Richards, Rafaelle Leone, Francesca Montalto, Misumori Nakamura, project team*

Engineer: *Matos Campos (mechanical)*
Landscape architects: *Jaão Gomes da Silva, Alvaro Siza Vieira*

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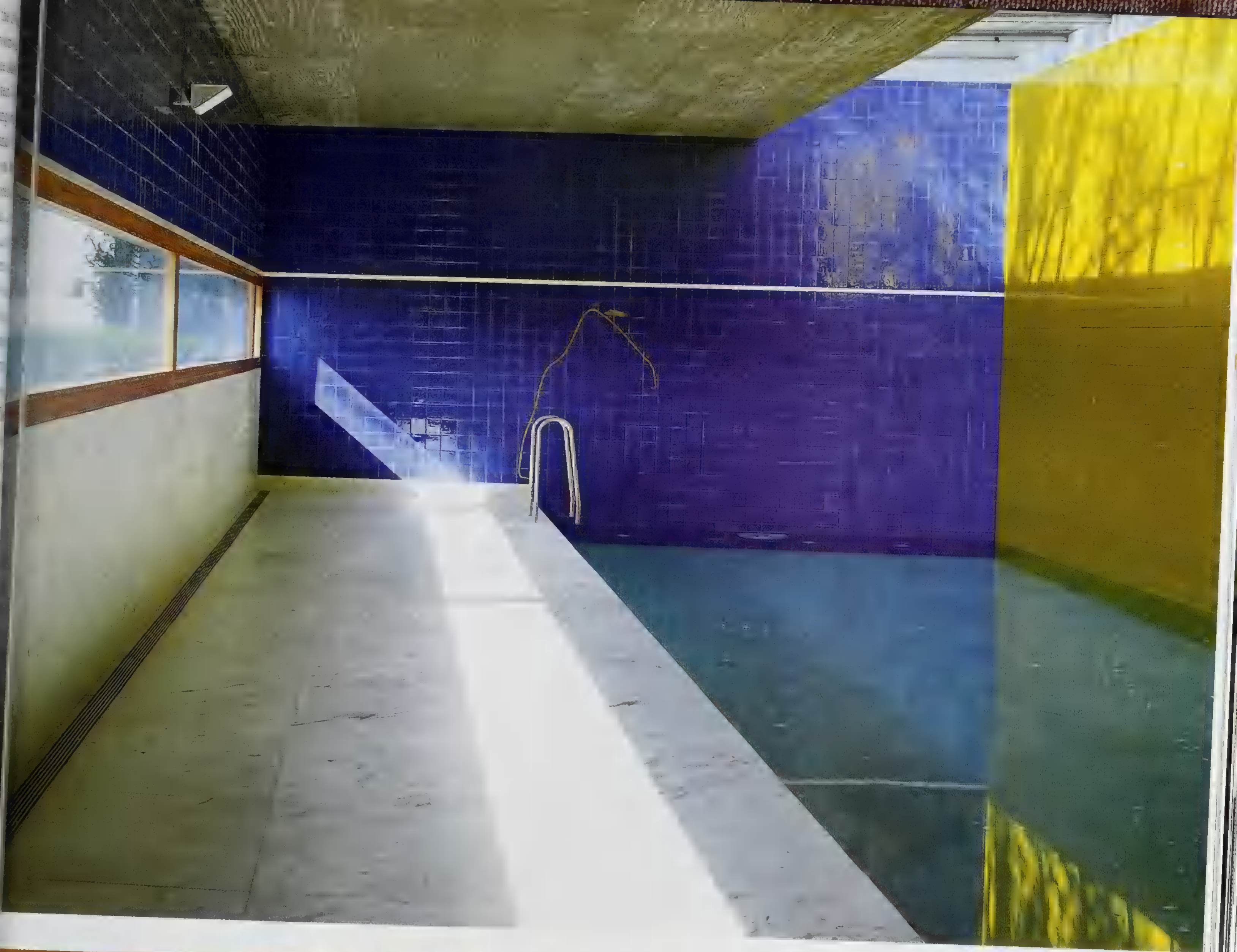
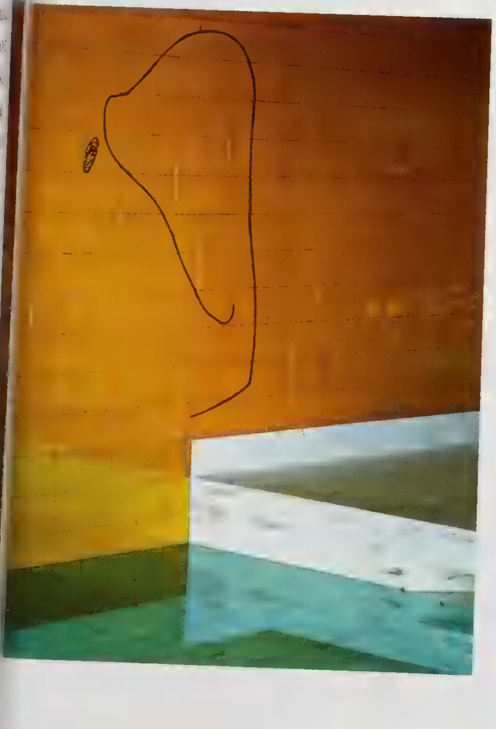
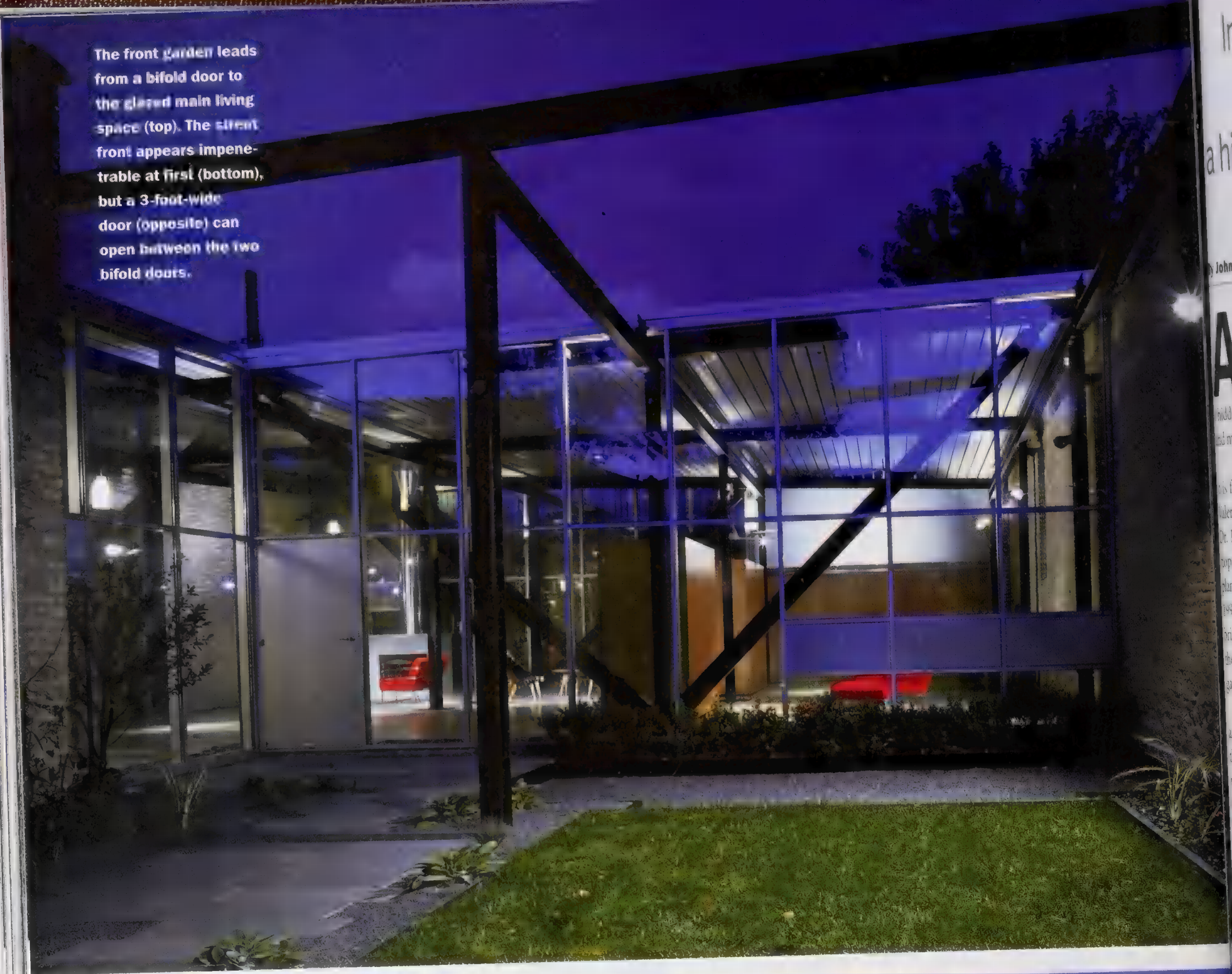
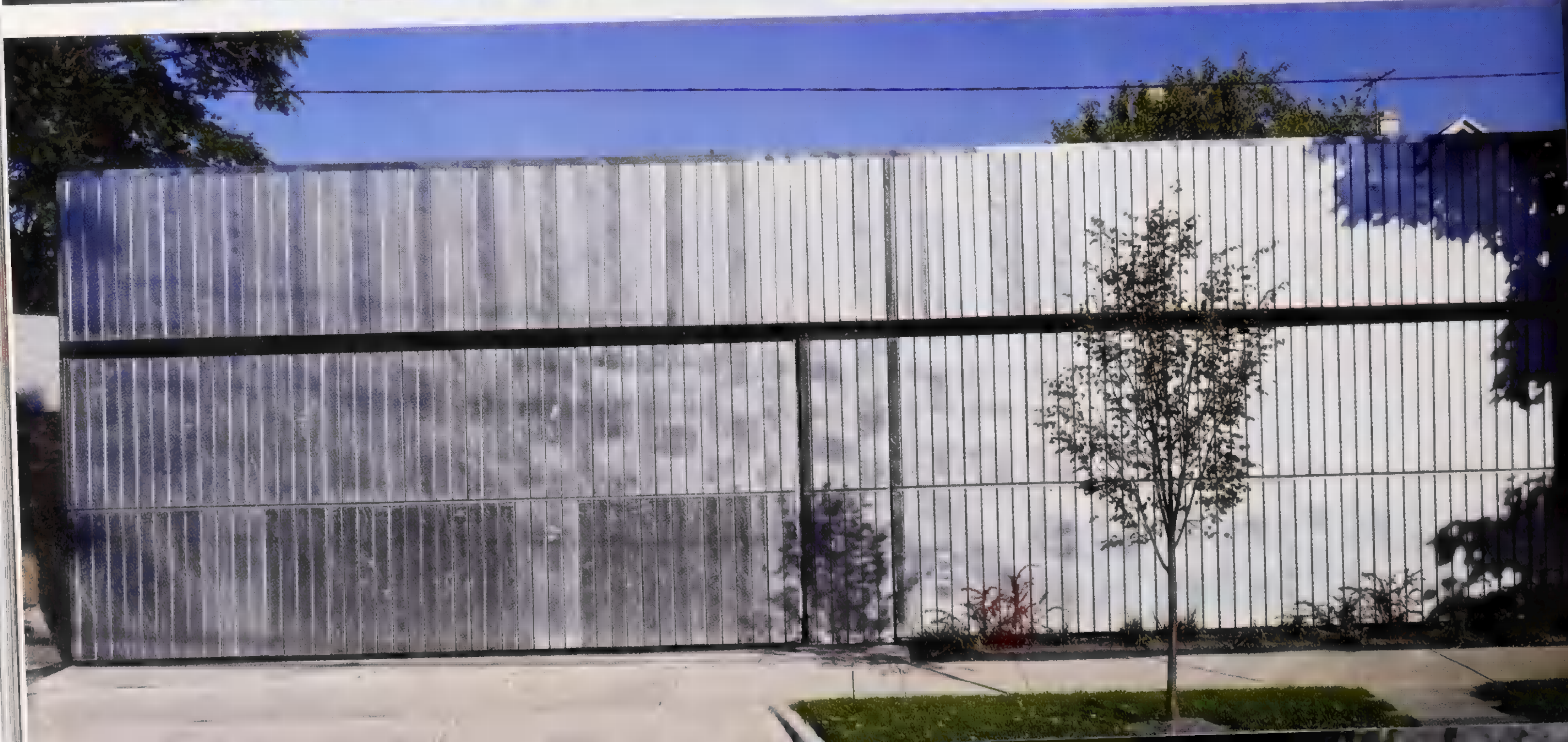




The pool area (this page) has a sublimely cool quality. Its blue and yellow ceramic tiles were inspired by a trip Siza took to Mexico. He plays these colors against the white marble of the pool deck, steps, and basin (above and near left). Over the tiles, he made abstractly sensuous sketches of the human figure (above and far left).

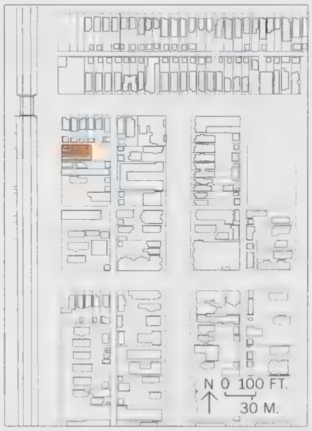
The front garden leads from a bifold door to the glazed main living space (top). The street front appears impenetrable at first (bottom), but a 3-foot-wide door (opposite) can open between the two bifold doors.





In Chicago, **Valerio Dewalt Train** turns a mechanical door into a gateway to a hidden garden and the **DOBLIN RESIDENCE**

By John E. Czarnecki, Assoc. AIA



Appearances can be deceiving. At the Doblin residence, in Chicago, a seemingly impenetrable and industrial stainless-steel facade transforms itself, becoming a kinetic element that peels back to reveal a hidden realm of garden, house, and garage—combining home and machine within a simple modern solution.

Carefully choreographed as this sequence may appear, it is far from the original intent of the building's architect, Joe Valerio, FAIA, of Valerio Dewalt Train Associates, and his client, Dr. Bruce Doblin. At first, Doblin, a young, single physician, hoped to buy an urban building with potential for an open loft plan, but developers were snapping up those properties in the late 1990s. "So I had to get a dog," he says, describing the one-story brick building he bought on Chicago's North Side, not far from the frame house he then occupied. Erected in 1918 as a warehouse and garage, the "dog" most recently housed a T-shirt silk-screening operation.

Doblin hired Valerio for an interior renovation, but structural analysis soon revealed an unstable front facade. Threatening to collapse, this elevation required demolition. Also, the engineers found that interior wood-frame partitions were supporting the bowstring roof trusses. These discoveries led Doblin and Valerio to the sobering decision to remove the front wall and roof structure, gut the interior, and keep only the rear, side, and two interior brick walls. That move changed the entire design process.

Although the 48-by-100-foot lot was tightly bound by an alley to the north and a house to the south, the varied nature of the urban streetscape—with single-family homes, apartment buildings, and small brick-and-steel manufacturing buildings across from an El embankment—gave Valerio freedom in designing a new facade. The industrial purpose of the existing structure, which consumed its entire parcel, actually aided him. Had the building originally been residential, Chicago city code would have stipulated a footprint set back 15 to 20 feet from the sidewalk and at least 5 feet from its other lot lines—and would have prohibited a garage fronting directly on the street. But the earlier designation granted Valerio flexibility in using the whole site.

Starting with the remaining brick walls, the architect designed a home that is hard-edged and masculine, yet offers a serene refuge from the city. As a gradually unfolding narrative, the project initially presents a facade formed by 16-foot-high sheets of galvanized corrugated steel, incised by two 10-foot-high bifold scissor garage doors flanking a 3-foot-wide door. One bifold opens onto a two-car garage, the other onto a front garden, and the smaller, hand-operated door in the middle allows for pedestrian access without lifting the mechanical bifolds. With all three doors closed, the wall appears solid and industrial, but as soon as the bifold

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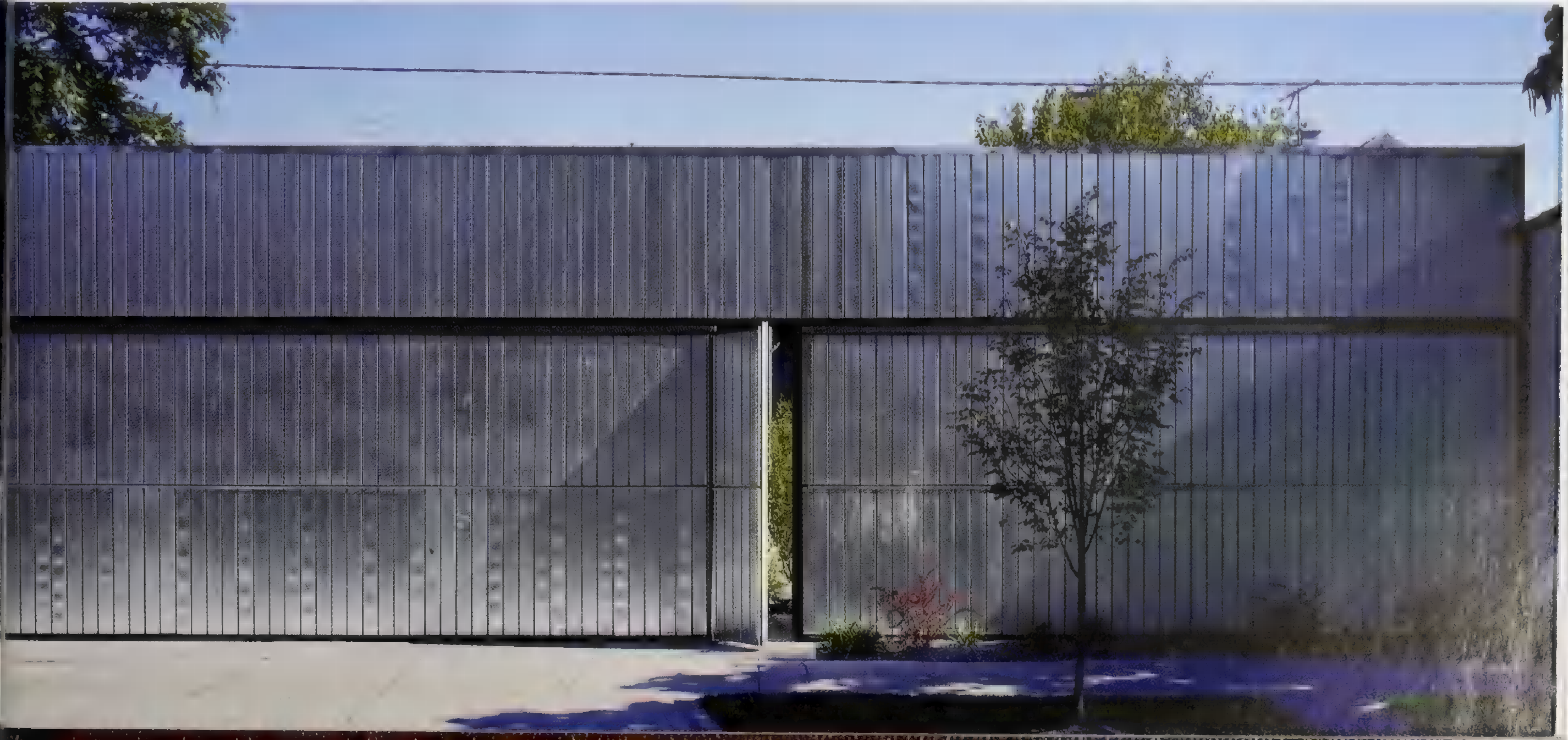
Project: *Doblin Residence, Chicago*
Architect: *Valerio Dewalt Train Associates—Joseph M. Valerio, FAIA, principal in charge; James Wild, Assoc. AIA, Amy Ciolek, project architects*
Structural engineer: *Robert Darvas Associates*



doors begin to retract, the elevation becomes sculptural. With the garden bifold open, tranquil views of vegetation soften the hard streetscape.

A bluestone path, complementing the galvanized steel's silvery gray, leads through the garden to the house's front door. As the trees and shrubbery grow, they will mask views from the street to the building's floor-to-ceiling glass facade and from the interior to the garden's bifold.

Inside the house, the 32-by-48-foot living/dining/sleeping space offers a domestic tabula rasa. Here, Valerio created a horizontal plane—a new, radiant-heated concrete floor, surrounded by a channel of bluestone river pebbles along the walls—on which to position such objects as sculptures or furniture. Doblin has already tried different arrangements in the few months since he's moved in, relying on a concrete fireplace and mobile birch cabinets, designed by Valerio, to help define separate areas.

The architect structured the building on a rational 16-by-16-foot grid with an overhead frame of wide-flange steel sections tying into the masonry walls and supported on wide-flange columns with stabilizing cross bracing along the glazed front and back walls.

The cool color and smooth texture of the concrete floor and exposed steel contrast with the warm, rough preexisting walls of Chicago common brick. Two of these interior brick walls define the garage enclosure. The rest of the interior is open, with a kitchen in one 16-by-16-foot bay, directly behind the garage, and two bathrooms in a rear bay. Three skylights hover above the main room. With glazing facing the front garden, the kitchen receives ample southern daylight. A finely detailed island in the kitchen includes birch cabinets, a sink, a counter, and a breakfast booth. Birch cabinets also hang from the kitchen's northern brick wall.

Valerio admits that the interior's surprising warmth, flexibility, and openness—made possible because it's so hidden from the street—evolved as much from happenstance as from design intent. It's a crisp, modern, mysterious insertion in the neighborhood, and seems like a perfect fit for Dr. Doblin. This winter, he had most of his old furniture—his previous life, really—stashed in the garage, just waiting to be hauled away. ■

Sources

Steel wall cladding: *Epic Decking*

Aluminum curtain wall: *Kawneer*

Steel hangar doors: *Schwiess Bi-Fold Doors; H&H Steel*

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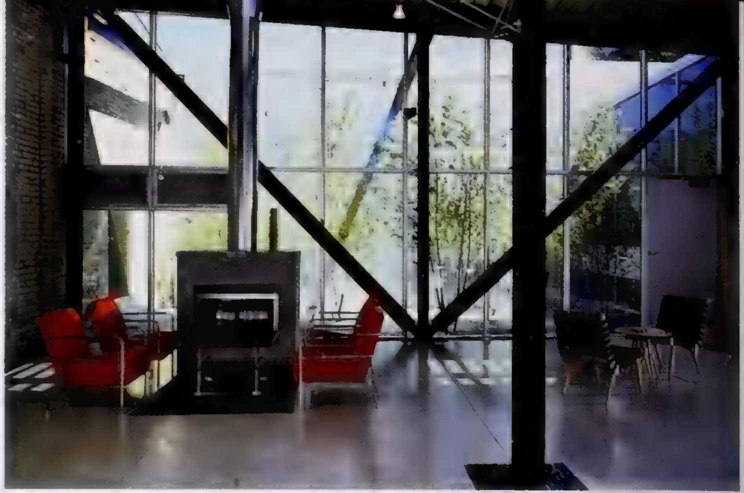
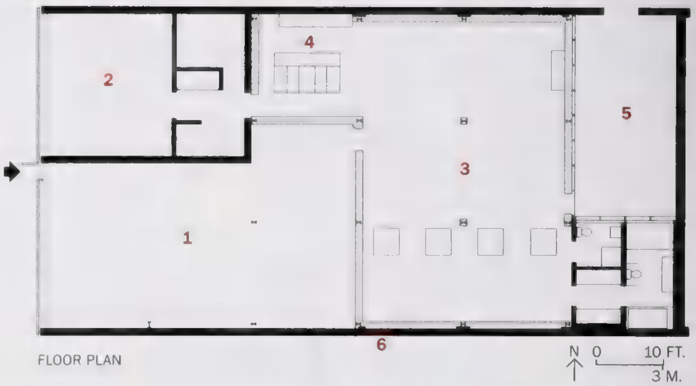
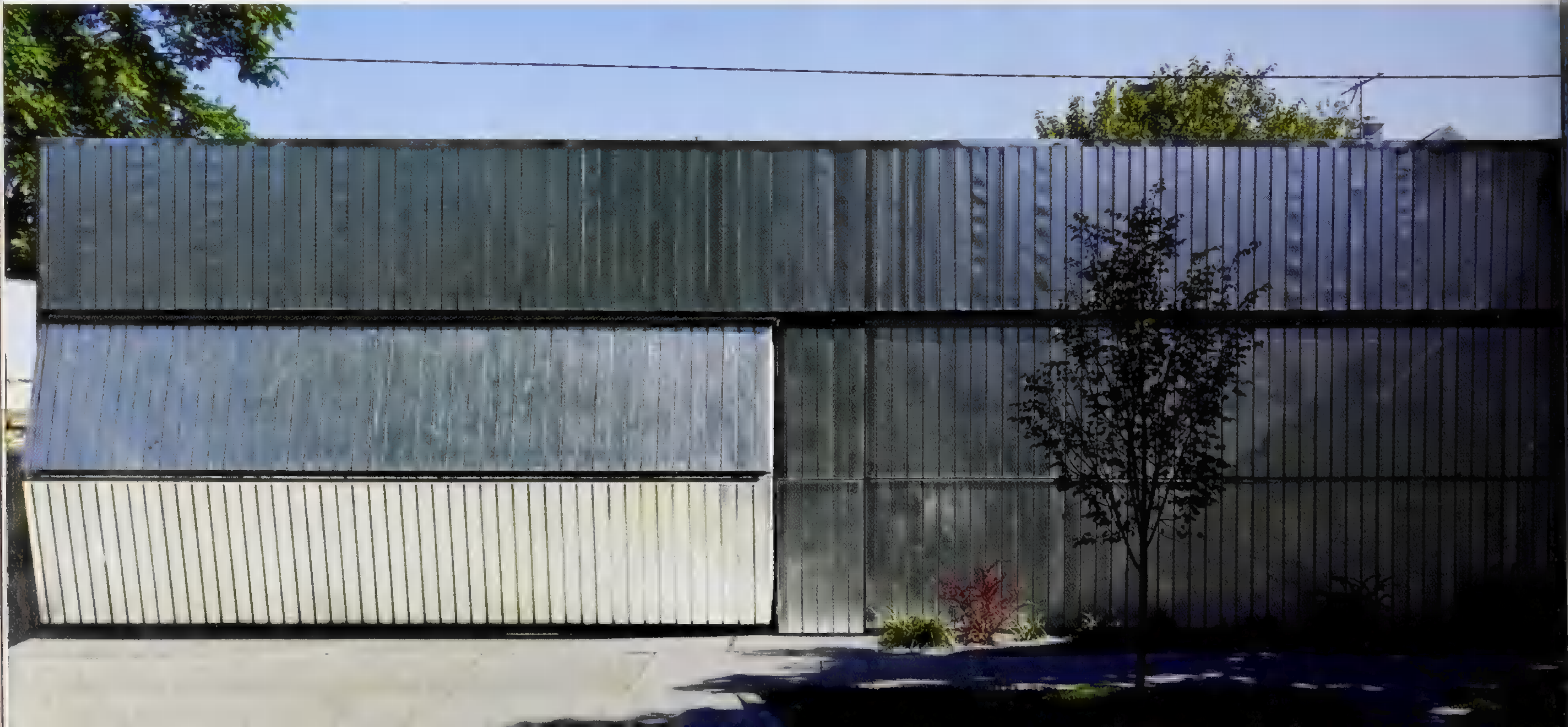
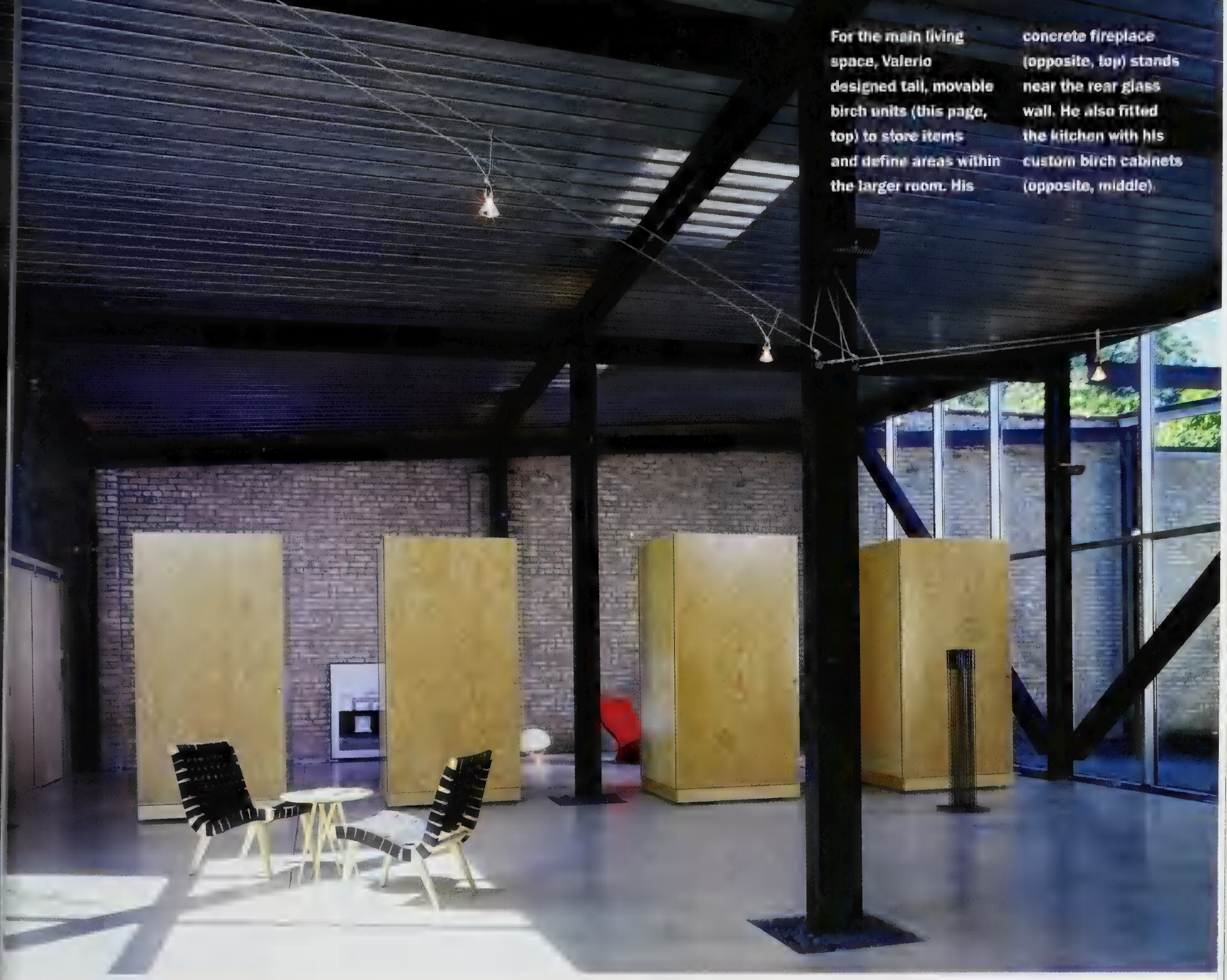




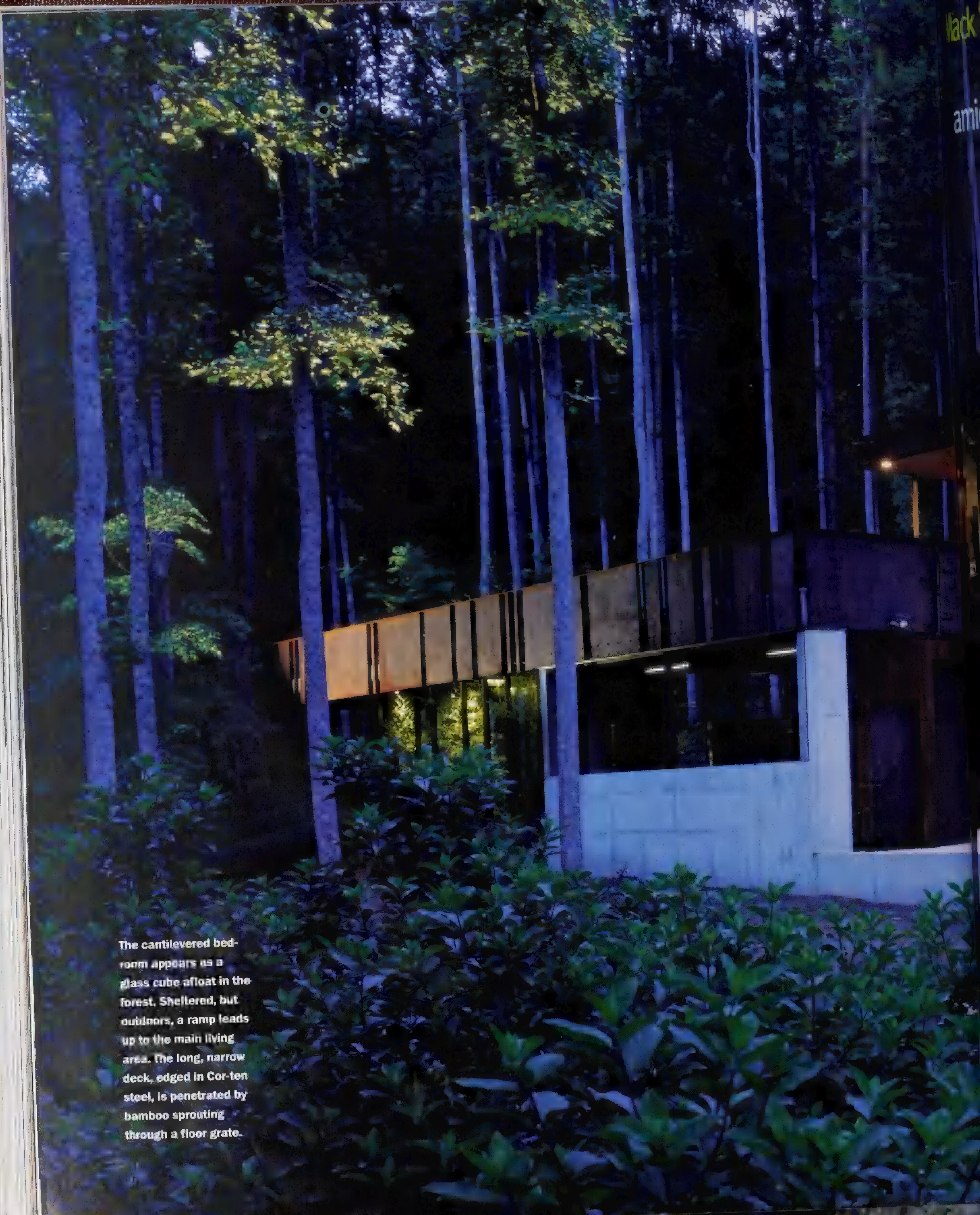
FLOOR PLAN

1. *Entry court*
2. *Garage*
3. *Living*
4. *Kitchen*
5. *Rear court*





For the main living space, Valerio designed tall, movable birch units (this page, top) to store items and define areas within the larger room. His concrete fireplace (opposite, top) stands near the rear glass wall. He also fitted the kitchen with his custom birch cabinets (opposite, middle).



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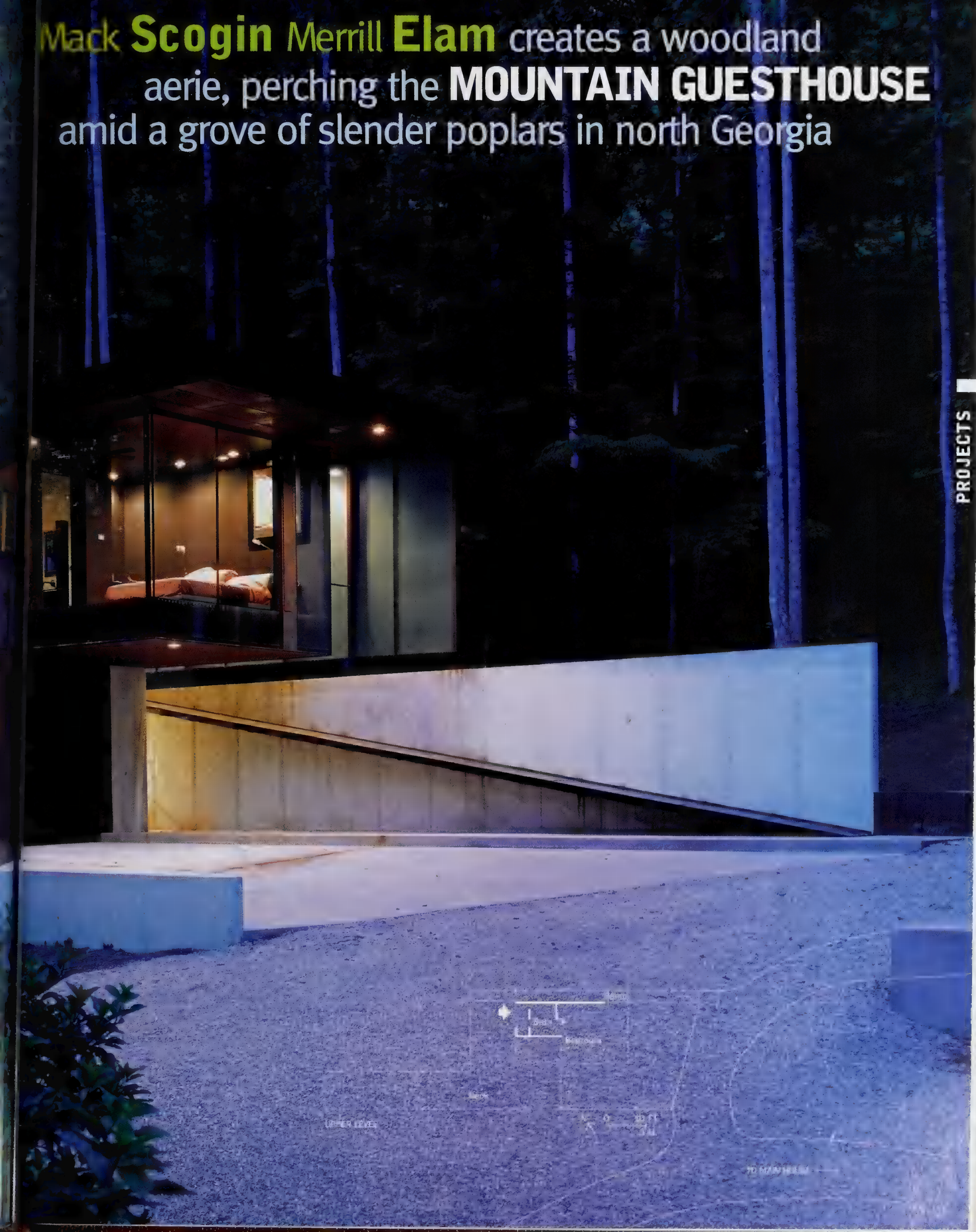
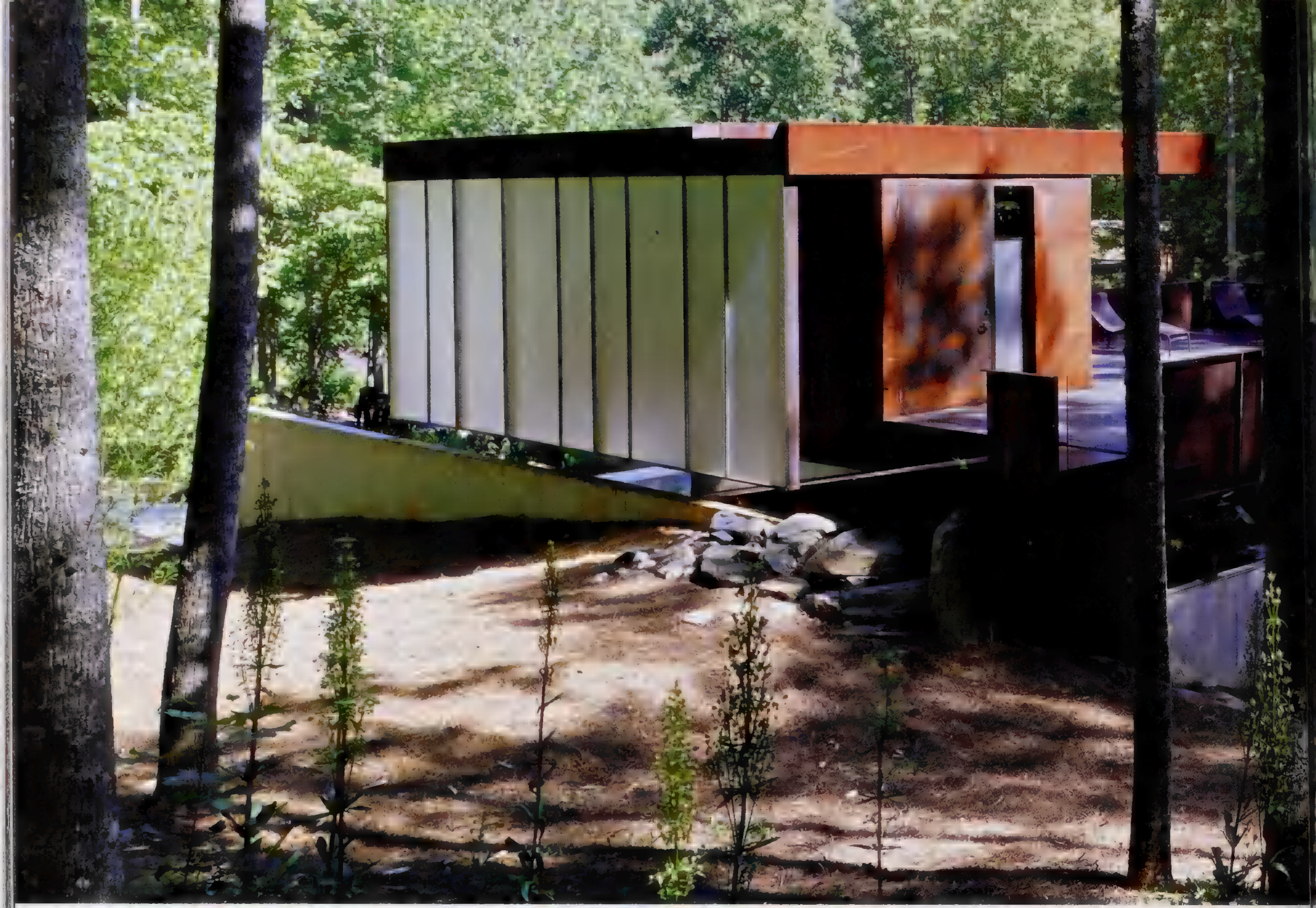
The cantilevered bedroom appears as a glass cube afloat in the forest. Sheltered, but outdoors, a ramp leads up to the main living area. The long, narrow deck, edged in Cor-ten steel, is penetrated by bamboo sprouting through a floor grate.

Mack **Scogin** Merrill **Elam** creates a woodland aerie, perching the **MOUNTAIN GUESTHOUSE** amid a grove of slender poplars in north Georgia





By Sarah Amelar

Giving the fleeting illusion of one long, high span traversing the forest, the narrow deck of the Mountain Guesthouse extends into the north Georgia woodland with the attenuated grace of a rope bridge across a jungle chasm. Though the deck actually rests on thin steel columns over gently sloping ground, these posts almost disappear into the landscape as they echo the rhythm and proportions of the slender poplars around them. With a thicket of bamboo sprouting (by design) through its deck, a cantilevered bedroom virtually floating among the trees, and an entrance requiring a slightly daring ascent (via ramp), this 1,000-square-foot cottage has earned its nickname, "the tree house."

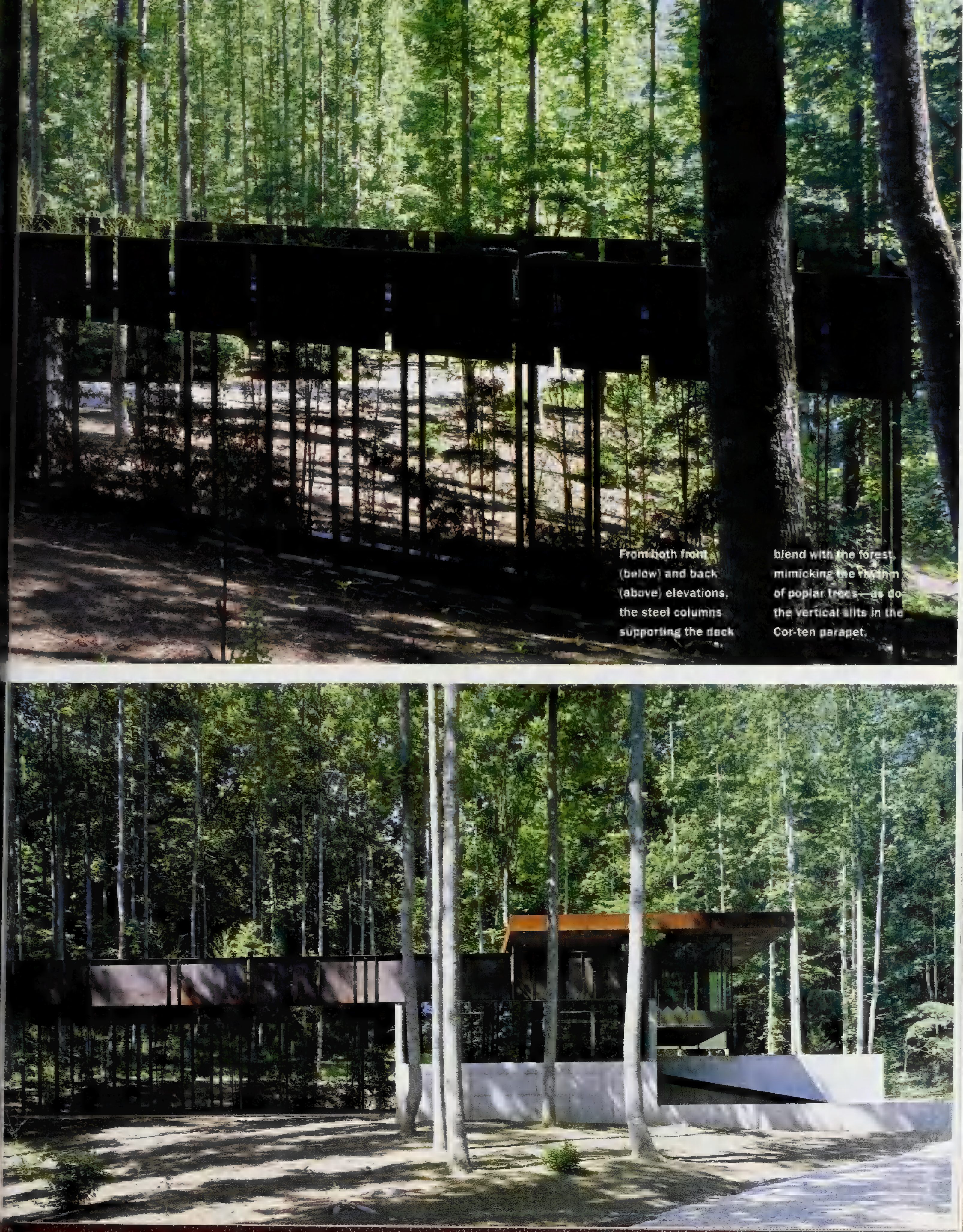
But its materials—glass, Cor-ten steel, slate, and concrete—are hardly typical of a tree house. And neither its architects, Mack Scogin and Merrill Elam, nor the clients initially envisioned such a long, lofty structure—nor even a guesthouse. Instead, the design evolved organically as the owners' lives changed.

It all began with the main house, just 80 feet away, which Scogin Elam and Bray [RECORD, April 1997, page 90] built on a woodland drive that winds through a 24-acre site in the Appalachian foothills. The Atlanta-based owners—a journalist and his wife, an avid landscaper—wanted a weekend retreat that could become their permanent home. Along a creek, the architects created an inside-outside house with a next-door guest suite (the original one on the site), playing planar forms against the surrounding hills. Soon the clients' children married, recalls Scogin, "started birthing babies—and, before you knew it, the grandbabies had taken over the guesthouse." So, he and Elam returned to convert the garage into a playroom.

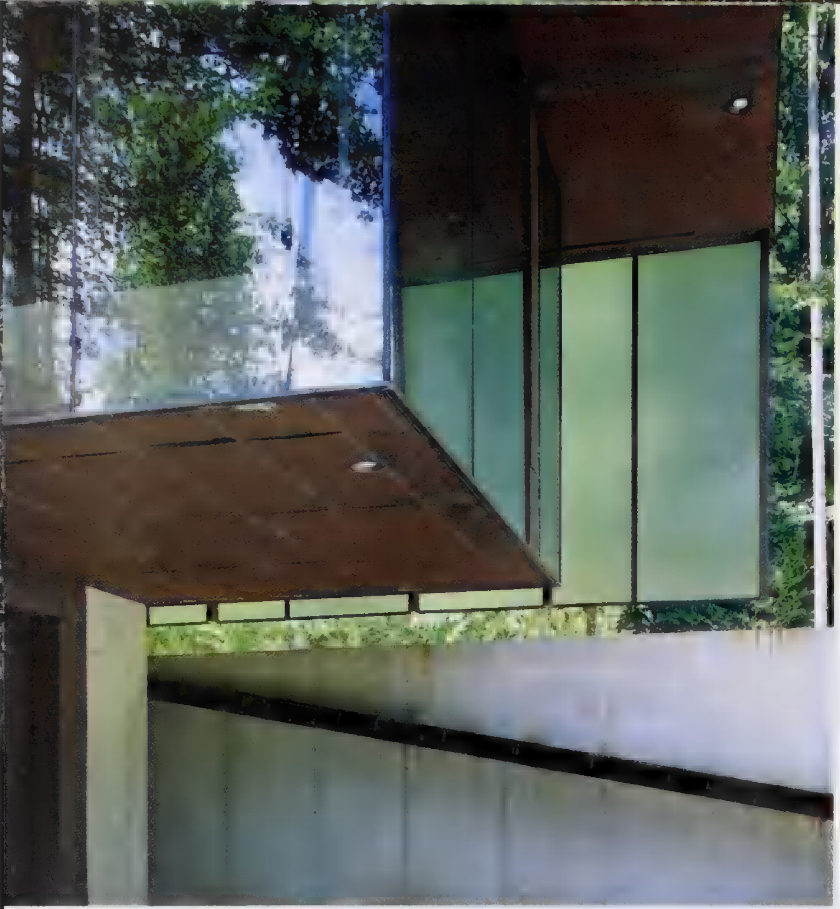
But the client, who'd done much of the landscaping herself, hankered after a shed for her tractors and seedlings—and then, well, the idea of adding a swimming pool emerged. To keep out animals, Elam proposed raising it on a high deck—reminiscent of the architects' own pool in their Atlanta home [RECORD, April 1998, page 130]. So, the design morphed from a garage/potting shed into a lap pool on an elevated deck with a cabana. But, in the end, it seemed impractical to maintain a pool in a part-time home, and the project was trimmed back to a garage. "Suddenly," Elam recalls, "we all missed that long, high, horizontal element in the landscape." Besides, the owners really did need more room (and privacy) for visitors.

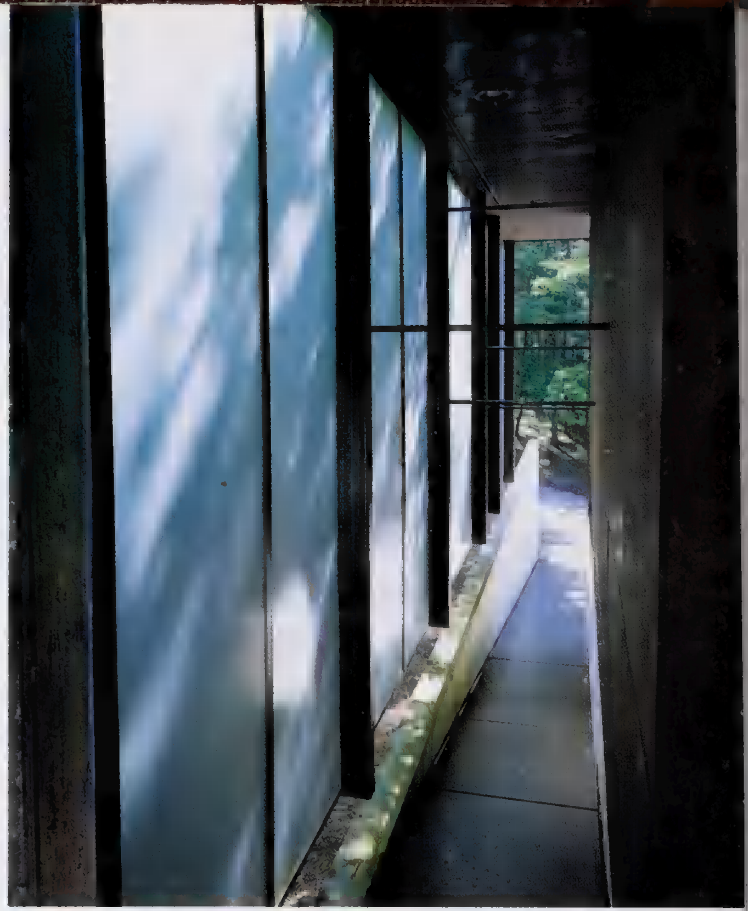
With the program finally settled, the architects created a one-bedroom aerie that is remarkable in its sculptural qualities and response to the setting. From the serpentine drive, this guest hideaway comes into view before the main house. Its diagram is fairly simple: a rectangular volume (the bedroom and bath) partially cantilevered atop a larger rectangular form (the garage), with a long, upper-level deck off one side and a ramp descending in the opposite direction. But Scogin and Elam transformed the diagram through an exquisitely subtle balance of solids and voids, volumes and planes, and opaque or matte surfaces and transparent or reflective ones.

As a result, parts of the building practically vanish or seem smaller than their true dimensions, while other elements—the long deck

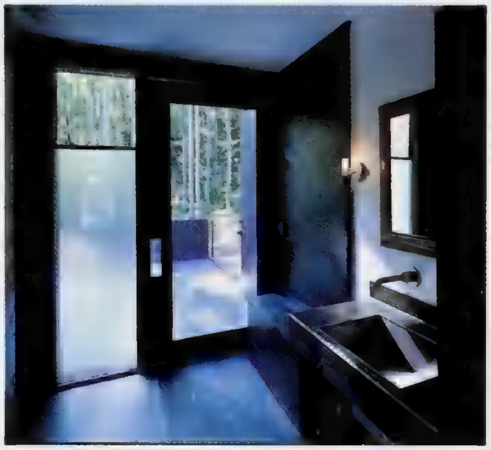


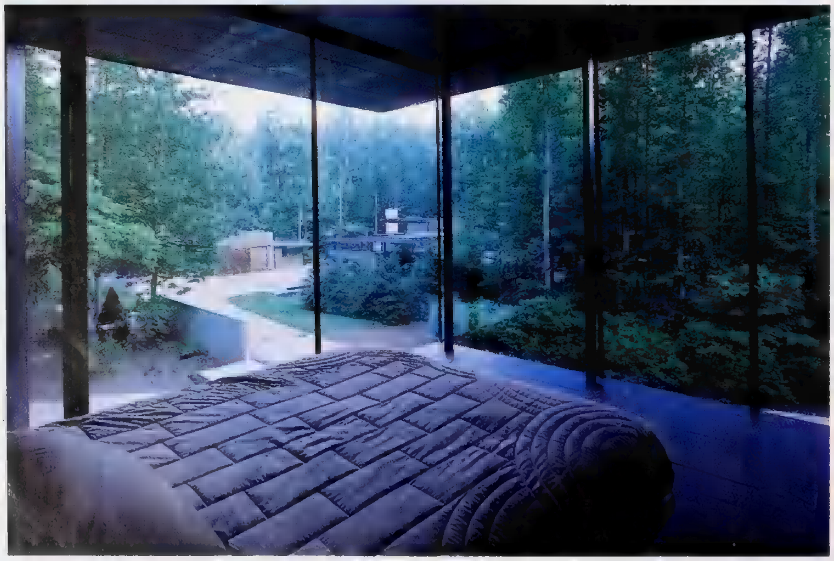
From both front (below) and back (above) elevations, the steel columns supporting the deck blend with the forest, mimicking the rhythm of poplar trees—as do the vertical slits in the Cor-ten parapet.





The entry ramp (above and above right) passes between vertical planes of concrete, translucent glass, and Cor-ten steel. Slate paving continues from the deck into the bathroom (right) and throughout the interior. The bedroom overlooks the main house (below).





and ramp—expand the house's perceived size. In less skillful hands, the front of the cast-concrete garage, for example, might have appeared heavy and bulky, but instead, its top half virtually dematerializes. Here, a wide band of mullion-free glazing, reflecting nearby foliage, reads as an opening—setting the Cor-ten parapet above it visually afloat. On the same elevation, two cantilevered forms appear equally unfettered by gravity: the cubelike bedroom, with floor-to-ceiling glazing, and the planar roof over it.

Ambiguity—between permanent and ephemeral, natural and built, heavy and light, indoors and out—plays an essential role in this structure. While its materials may be hard and man-made, they meld with the site, as the steel's rusty patina mimics moss and lichen on the poplars, and slats in the parapet, along with the columns, echo the rhythms of the forest.

Merging indoors and out, the entry ramp, leading to living space over the garage and basic kitchen, rises between a well-grounded wall of Cor-ten and a shojilike screen of translucent glass. As the route passes narrowly between building skins, it accentuates the play of light and shadow. The arrival point is a 1,000-square-foot deck—an outdoor living room with sunset views—that doubles the house's occupiable space. Slate pavers continue inside from the deck, covering the entire floor. In the bedroom, the interior seems to open completely, with floor-to-ceiling glazing—but the glass is fixed, while operable panels in the room's solid walls offer airflow.

For all its apparent ambiguity and paradox, the design is neither jarring nor contradictory. Strong verticals and horizontals play harmoniously against the hills and the ramp's dynamic diagonal. And though this well-grounded house may seem suspended in the treetops, it merely holds that position visually—hovering in an exceptionally fine balance. ■

Project: *Mountain Guesthouse, Dillard, Georgia*

Architect: *Mack Scogin Merrill Elam Architects—Mack Scogin, AIA, Merrill Elam, AIA, principals; David Yocum, Penn Ruderman, Denise Dumais*

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WHERE WE STAND

AIA Unaudited Financial Results

Fellow Members,

In 2001, our Board of Directors established a three-year plan to rebuild the organization's net assets. Because of the commitment and hard work of volunteers and management, we exceeded their target by over $1 million and did it one year ahead of schedule. At this turning point, we are renewing our commitment to financial vigilance as well as our efforts to enhance member services, professional growth, and public appreciation of the value of architects. Here are examples of some of the activities we are now undertaking on your behalf.

Renewed Support for AIA Contract Documents

A comprehensive campaign surrounding our Contract Documents program is underway with improvements to the software delivery along with new documents on design-build, interiors, and international practice. This is coupled with strong marketing support, and strengthened activities to educate all members of the construction community. Our goal is to increase the influence of AIA Contract Documents and members in coordinating the industry.

New Look for www.aia.org

The AIA member website has been redesigned providing members and the public with 24/7 access to expanded professional content, news, best practices, and public information.

Scholarly Journal for Members

A new, printed quarterly journal publishing innovations in design, practice, and applied research for AIA members and their clients is being planned for this year. Each issue will take an in-depth look at topics such as architecture research and design, public architecture, trends in making communities more livable, and clients making a difference.

An Emerging Research Agenda

Our profession is challenged to not only gather information about architecture but to generate new knowledge about its impact on human activity. An Institute research agenda, under development for two years, will be introduced at the convention in May.

The availability of new financial resources does not mean abandoning the fiscal disciplines adopted over the last two years. We remain dedicated to sound financial management and a multi-year planning process that encourages charting a more strategic course. We have turned the corner at the AIA National Component and intend to continue proceeding in positive directions with your help. As always, your comments are welcome. We hope to see you in San Diego at the convention, May 8-10.

Sincerely,

Norman L. Koonce, FAIA
Executive Vice President/Chief Executive Officer

AIA Balance Sheet ($000s)

	Audited 2001	Unaudited 2002
Assets		
Cash	$2,036	$712
Investments	8,853	12,643
Prepaid Expenses	684	818
Accounts Receivable	1,247	1,577
Inventory	4,186	2,841
Fixed Assets (Net)	10,531	9,941
Total Assets	**$27,537**	**$28,532**
Liabilities		
Line of Credit	$1,397	$0
Accounts Payable	2,928	2,367
Deferred Dues and Other Revenue	5,312	6,474
Notes Payable	16,237	16,190
Total Liabilities	**$25,874**	**$25,031**
Net Assets		
Unrestricted	(1,490)	552
Temporarily Restricted	2,098	1,894
Permanently Restricted	1,055	1,055
Total Net Assets	**1,663**	**3,501**
Total Liabilities & Net Assets	**$27,537**	**$28,532**

AIA Income Statement ($000s)

	2002 Budget	2002 Unaudited Actual
Revenue	$38,087	$38,133
Operating Expense	(36,277)	(36,266)
Operating Net Income	**1,810**	**1,867**
Non-Operating Income	205	175
Unrestricted Net Income	2,015	2,042
Restricted Expense	(200)	(203)
Total Net Income	**$1,815**	**$1,839**

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Building Regulations May Finally Shed Their Impenetrable Language

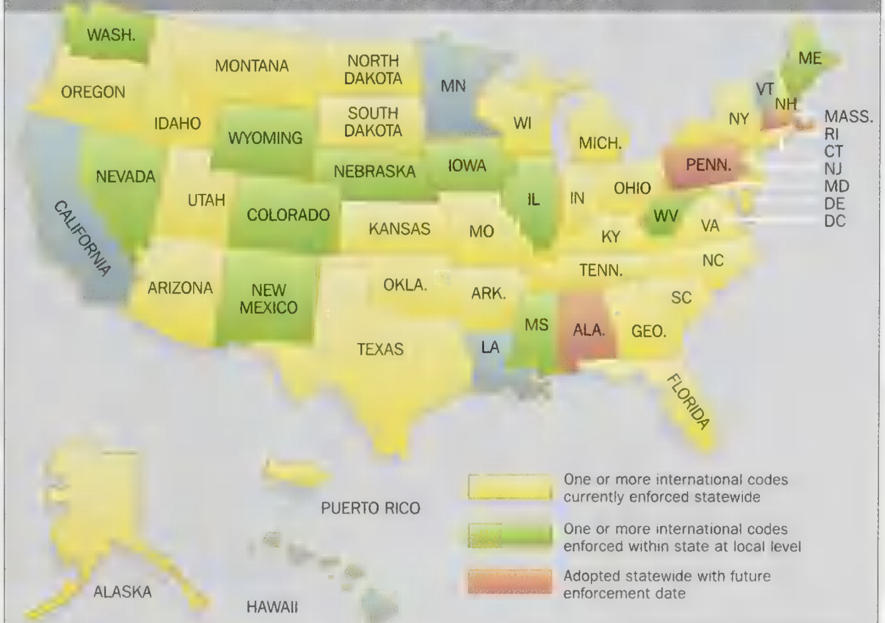
A NATIONWIDE EFFORT IS UNDER WAY TO MAKE BUILDING CODES MORE RATIONAL AND USABLE

By Barbara Knecht

Building codes are the history of how we react to situations," explains Carl Galioto, partner in charge of Skidmore, Owings & Merrill (SOM)'s technical group and a member of the New York City Mayor's Commission on Adoption of a National Model Code. "Changes have occurred because of tragedies such as the Triangle Shirtwaist Factory fire [New York City, 1911] and the collapse of the walkway at the Kansas City Hyatt hotel [1981]. September 11 has been another catalyst to reexamine our assumptions, to look at redundancy and the interrelationship of systems."

The reactive approach to building failure is an awful, though valuable, way to understand and improve building performance. Failures become opportunities to examine assumptions, to perform studies, and to invite democratic debate on best practices. The collapse of the World Trade Center towers is a spectacular example of how impossible it is to write codes that anticipate the infinite combination of factors that contribute to building failure and loss of life. New York structural engineer Guy Nordenson—a volunteer on the Structural Engineering Association of New York's post-9/11 damage-assessment team—observes, "No one had written a code for how to handle the situation that faced us, that is, how to safely demolish the structurally chaotic piles of debris there. We were constantly debating and arguing and persuading in a classic example of deliberative Athenian democracy. And it worked, because no one was hurt as part of that effort."

INTERNATIONAL CODE ADOPTIONS



SOURCE: INTERNATIONAL CODE COUNCIL

The majority of adoptions of international codes have taken place in the past year or two. It will, therefore, be some years before the impact of the changes can be measured. California is the largest state of the five remaining where no jurisdiction has adopted any one of the international codes. More than half have adopted it statewide, even if some jurisdictions, like New York City, maintain their more stringent codes within the city limits.

Barbara Knecht is an architect and principal of a New York City–based consulting firm. She writes about architectural technology, design, and housing policy.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 188 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe the recent changes in building codes.*
2. *Identify benefits of the national code.*
3. *Explain the difference between prescriptive- and performance-based codes*

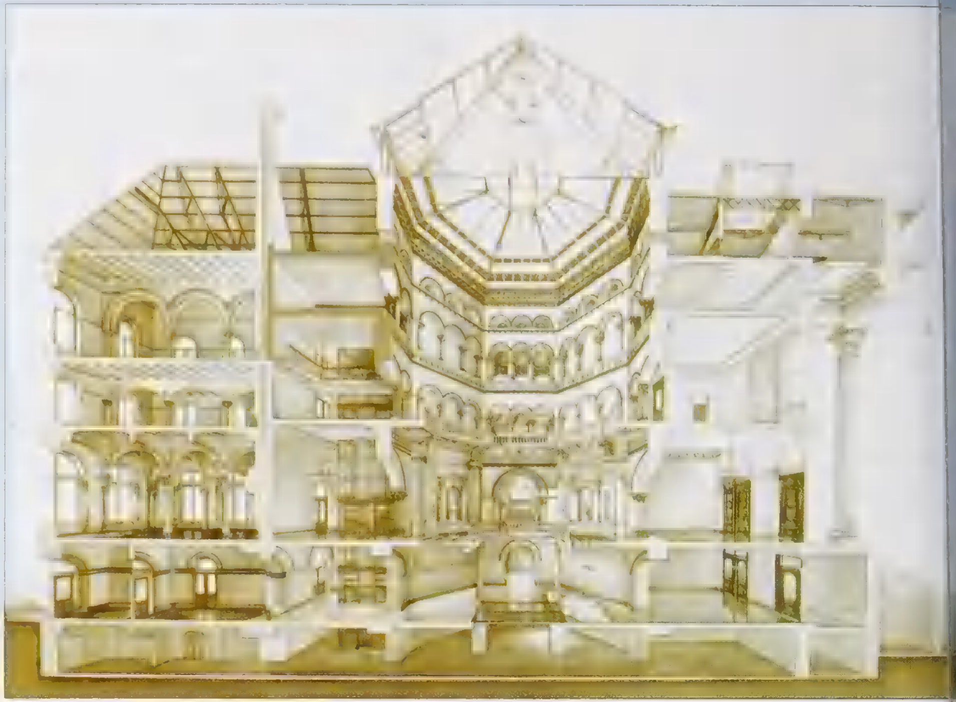
WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to **architecturalrecord.com**.

Tangled web

Although the first national code was published at the beginning of the 20th century, codes have remained stubbornly local and regional until the past few years. Now the building industry and the code makers themselves are surrendering to the drive for uniform structure across the country, and performance codes are nearly as common as prescriptive codes. The most significant change in the past decade is the creation of a single body of codes the initiators hope will be used nationwide and internationally.

In the U.S., modern building and fire codes have been developed in the private sector, most familiarly by three regional not-for-profit organizations: Building Officials and Code Administrators International (BOCA), International Conference of Building Officials (ICBO), and the Southern Building Code Congress International (SBCCI). They produced, respectively, three model building codes in the 20th century: the BOCA National Codes commonly used in the eastern and Great Lakes regions; the Uniform Building Code (UBC) adopted by the western and midwestern states; and the Standard Building Code, which has been the prevalent code in the southern states.

These so-called model codes form a collection of standards and regulations that become law only when adopted by governmental juris-



The Tweed Courthouse in Lower Manhattan, completed in 1872, is a worthy New York City landmark that now houses the offices of the N.Y.C. Board of Education. Arup was able to maintain the grand and historic interiors while providing sufficient fire-safety systems by modeling the behavior of a fire, the building, and its occupants with fire-engineering studies. With the studies, Arup was able to show that the intent, if not the letter, of the code had been met.

dictions. Each of them includes, by reference, standards developed by other industry organizations, such as the National Fire Protection Association (NFPA) or the various associations of mechanical, electrical, and plumbing trades. And each of them, when adopted by a governmental jurisdiction, may be subjected to modification for specific conditions in a particular location.

Although the model codes are widely adopted within their regions, there has been no shortage of jurisdictions—notorious among them Chicago and New York—that have created their own (often Byzantine) codes. Adjacent municipalities may have different processes and standards for the same building. This quirk exists in the extreme in New York City, where the state builds buildings within the city limits according to its own code adjacent to buildings built to city code. Other sorts of jurisdictional overlap and conflict abound. "In Pennsylvania," explained Christine Ussler, an architect in Bethlehem, "we have a state code administered by the Department of Labor and Industry, which is responsible for plan checking, inspection, and final review. This code is primarily concerned with safety, not with construction methods. Local jurisdictions, including fire departments, then adopt local codes. The result is that any project larger than two residential units in a jurisdiction with local authority must be reviewed independently (not coordinated through one agency) by three entities.

Pressure for national uniformity grew during the 1970s, as more architects, builders, and manufacturers produced work across the country. "The ultimate goal of a national code is to make it easier on the end users, but the underlying logic is that if an existing standard is safe in New York, then it is safe in California," says Paul E. Myers, assistant director of the Cincinnati Department of Buildings and Inspections and president of the Board of the International Code Council (ICC). "In 1994," he continues, "the three regional organizations came together and created the International Code Council, under which they agreed to cooperate in the development of a single set of coordinated model construction codes."

By 2000, the family of integrated codes (I-codes), including the International Building, Fire, Residential, Private Sewage Disposal, Mechanical, Fuel Gas, Property Maintenance, Energy Conservation, Zoning, and Electrical codes, were complete and ready for adoption. New codes, including the 2001 ICC Performance Code for Buildings and Facilities, are being added, and the existing ones will be updated every three years. On February 1, 2003, the three separate organizations ceased to exist in favor of the consolidated single entity, the International Code Council. The pace of adoptions has been quite high, according to the ICC, and, indeed, only five states remain where no jurisdiction at all has adopted some part of the ICC codes. This unity, however, hasn't stifled competition. The NFPA chose not to join the ICC coalition [RECORD, August 2002] and has, in the intervening years, developed its own building code (NFPA 5000) to add to its family of codes, which is also available for adoption.

New York State has adopted the International Building Code (IBC), and New York City has a task force that is studying the feasibility of adopting IBC 2003 or the NFPA 5000. Recommendations of the task force are expected this month (April 4). Patricia Lancaster, the commissioner of the N.Y.C. Department of Buildings, is optimistic about the value of shifting to one of the national codes. "They are written in clear and understandable language so that even the general public can understand

Alfred Lerner Hall (1999) is the student center at Columbia University, in upper Manhattan. Between masonry wings is a glass-enclosed circulation hub that faces the central open space of the McKim, Mead & White–planned campus. Arup preserved the transparency of the glass wall and the clean, sharp lines of the exposed steel structure through fire-engineering studies that showed that the steel did not require fire protection, saving the client between $500,000 and $750,000.

Designing Codes for Developing Countries

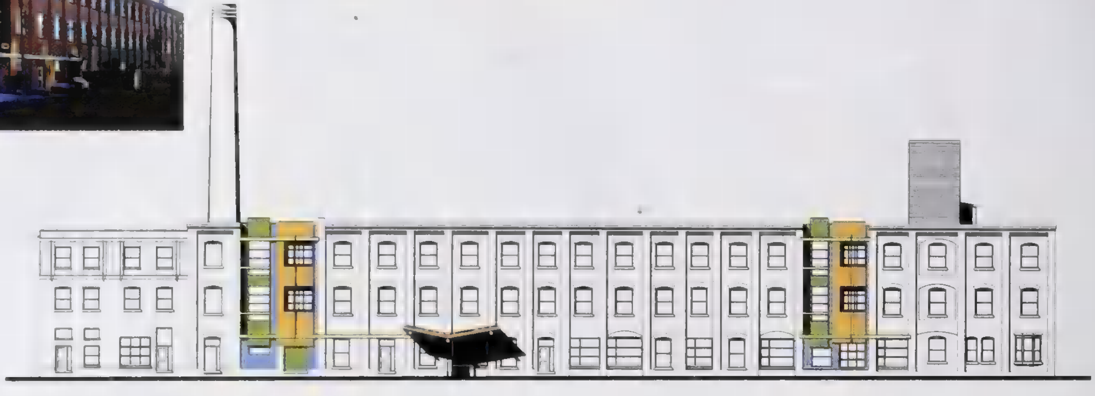
Stephen Forneris, an architect in New York and Ecuador, opens his articles and presentations with a depressing statistic. "For the past 30 years, the developing world has shouldered the unpleasant burden of suffering 70 percent of all natural disasters and 91 percent of all disaster-related fatalities, with earthquakes in Latin America alone responsible for 53.4 percent of these fatalities."

The lack of building codes and enforcement of what codes there are is blamed for the high number of fatalities caused by collapsing buildings when earthquakes occur in developing countries. Latin America is highly vulnerable to earthquakes, and a lack of up-to-date building codes is pervasive. Stephen Forneris took these facts to Senator Christopher Dodd who, along with Senators Joseph Lieberman and Jeff Sessions, introduced and passed "The Code and Safety for the Americas (CASA) Act" in 2002. This modest pilot program, funded with $3 million over two years, will provide for translation (or funds to translate) the International Code Council building codes into Spanish, and provide training to architects and contractors in El Salvador and Ecuador in appropriate use of the code.

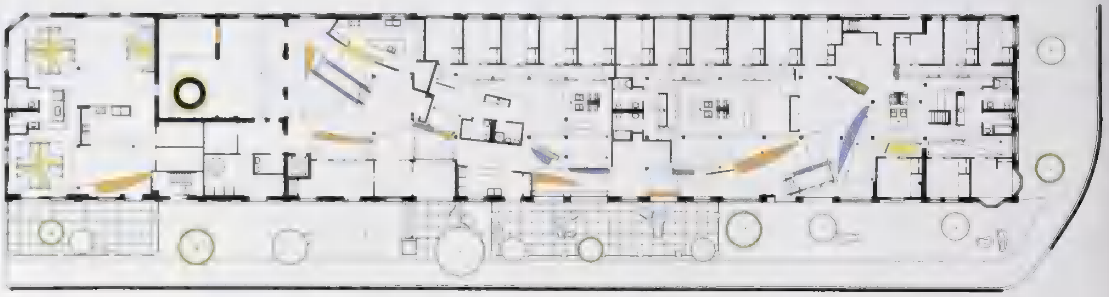
The argument for encouraging safer building is a potent one: We can't prevent natural disasters, but, at least in the case of earthquakes, we have the tools to build structures that can dramatically reduce the number of deaths they cause. The World Bank and the United States Geological Survey estimated that $280 billion in disaster relief aid could have been saved by a $40 billion investment in disaster prevention.

The ICC model codes serve as a base for each governmental entity to adopt to its own particular set of circumstances. David Eisenberg's statistics are powerful support for integrating sustainable building practices into building codes, and they take on even more urgency in places that are starting with a clean slate. "Of the 6.3 billion people living on earth today, less than one third are living in the kinds of buildings described by our model building codes. Another third are living in earthen structures, and the final third are living in houses made of other nonindustrial or scavenged materials. And a few million are living in no structures at all." Sustainable building is an imperative as society attempts to solve global housing problems. Balancing the need to increase building safety without building to inappropriate standards that place burdensome costs on the environment and individuals will require skillful crafting of new codes appropriate to the places, conditions, and cultures where they are being used.

Forneris agrees with the need for that balance. "We see the need to edit and focus on what is really important to life safety in the codes. Just by codifying and enforcing regulations for door swings, we will improve safety at no cost. General egress and occupancy classifications will cut down on deaths. Our task is to cipher through the manuals and work with the governments to distill and implement what is economical, safe, and appropriate." *Barbara Knecht*



WELLINGTON STREET ELEVATION



GROUND FLOOR

Strachan House (1996), in Toronto, Canada, is home to formerly homeless adults. Private rooms open onto a three-story "public street." Shared living rooms and kitchens are divided by partial-height walls or railings. Each floor is divided into two fire compartments by a full-height wall with a door that closes automatically in case of a fire. The second- and third-floor living rooms are expressed on the facade (right) with colored cement board.

them," she says. "They are organized in a logical structure but are flexible in the specifics, so that a jurisdiction, such as New York, can make them as strong as our code currently is. Buildings will be safer because users will be able to understand what the code is trying to accomplish."

Carl Galioto of SOM, who is on the task force, adds, "Compared to the current New York City code, for example, the IBC model code is written so the references are kept up-to-date. This takes the burden off the local jurisdiction to develop and update standards." Changes can be made at the local level, but those that have national relevance can be made at the national level, further reducing the cost and burden to localities. Commissioner Lancaster observes, "No other jurisdiction has dealt with issues of safety and density the way New York has, and we foresee some of those lessons being adopted by the national codes."

Breaking the codes

The model codes reflect another positive trend in code writing: the shift from prescriptive-based codes to performance-based codes. Historically, our codes have been prescriptive and formulaic. For example, the width of an exit stairway is calculated based on the number of people it is expected to carry during an evacuation. There are specific distances to exits and other similarly prescribed fire and life safety requirements, which, in theory, all work together to provide a safe environment.

Formulaic buildings, such as chain stores, benefit from, or perhaps are the result of, prescriptive codes. Prescriptive codes form the basis of the model codes, but the model-code organizations have also published separate performance-based codes, such as the 2001 ICC Performance Code for Buildings and Facilities (mentioned above) and the NFPA Life Safety Code. The performance codes include specific objectives and quantifiable measures, such as a maximum time for exiting, but don't specify the means. This is a relatively new development, but it still has roots in prescriptive codes.

With sufficient expertise and time, and a modicum of cooperation on the part of building and fire officials, it has typically been possible to build buildings or use materials that are not specifically permitted. Most prescriptive codes include a general statement that they do not intend to limit the use of any materials or methods not specifically described by the code if an alternative can be shown to be suitable on the basis of past performance, tests, or evaluations. This is certainly a common route when renovating historic structures. "BOCA has had a cumbersome point system for establishing equivalent safety in historic structures, where meeting the codes literally means destroying their historic character," explains Ussler, whose Pennsylvania practice includes substantial adaptive reuse. "We have had pretty good success with it after years of experience, but ultimately, it is the decision of the inspectors."

In New York City, Arup was the original mechanical, electrical, plumbing, fire, and civil-engineering consultant under John G. Waite &

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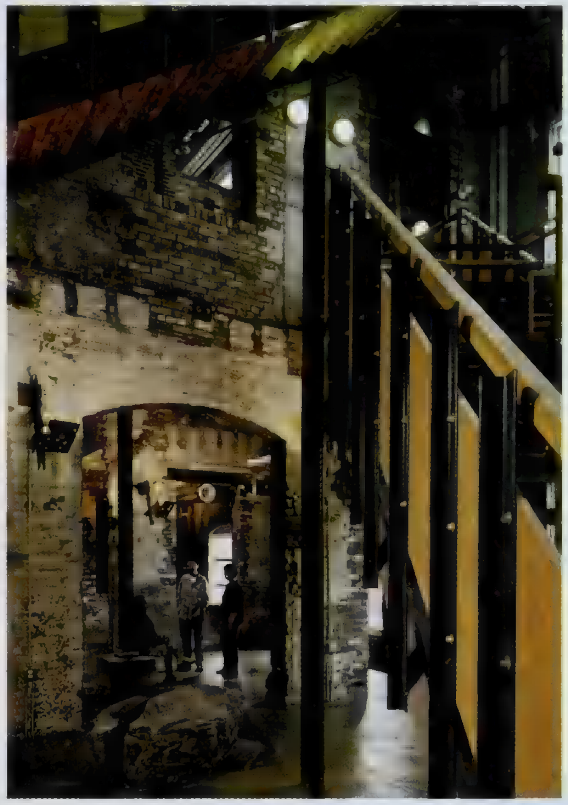

Stairways rise fully exposed in the three-story height "street," creating a sense of openness. The ground floor (left) is completely open to the central volume, while on the upper floors (above), the stairs lead onto walkways, which have windows and openings to the space that will be closed off automatically in case of fire. By code, Strachan House is classified as a hospital, which allowed configurations not normally allowed in housing.

Associates, architects for the original adaptive reuse of the historic 1870 Tweed Courthouse, which is adjacent to City Hall in Lower Manhattan. It was impossible to meet contemporary building and fire codes and maintain historic elements, including the ornate ceilings, the grand rotunda, the exposed structural elements, and the wood doors with etched glass, of the original building. "It was an existing landmark building with a change of occupancy," explains Leo Argiris, principal at Arup and a structural engineer. "We couldn't install sprinklers in some areas, enclose the stairs, or take other measures prescribed in the codes. So the approach we took was to better understand the anticipated hazards and determine what measures we could take, and then to model the actual performance of the fire, the building, and the occupants in fire-engineering studies."

Arup pioneered the implementation of this process in Columbia University's recently constructed Alfred Lerner Hall (1999)—for architects Gruzen Samton and Bernard Tschumi Associates [RECORD, November 1999, page 94]—distinguished by a glazed atrium circulation hub in which a glass wall is supported by steel ramps, which are, in turn, hung from long-span trusses. Within this open space, the structural steel is exposed and the glass wall is fixed with a system that does not require mullions. Preserving the transparency and the clean lines of these elements was key to the architectural character of the space, but the high first cost of fireproofing the steel with nonflammable, intumescent paint and the subsequent burden and cost of maintenance prompted Arup to suggest another approach. Using fire-engineering studies in which they modeled the space and simulated the likely fires, they were able to predict the behavior of fire and demonstrate that the steel would meet the intent of the code without the intumescent fireproofing.

Creative responses

The purpose of building codes is to protect public health, safety, and general welfare, but what exactly is the scope of that responsibility? "We grapple with the safety of individuals and the safety of the public," said Commissioner Lancaster, "but we also try not to enact rules or code changes that are overly prohibitive to the quality of life." Or that are prohibitively expensive, the building industry would add, a notion the commissioner would unconditionally agree with. "It is already extremely expensive to build in cities like New York. If we make it too expensive, people won't come here to build," says Lancaster.

The findings and recommendations of the World Trade Center Building Code Task Force, released this February, appear to target weaknesses in egress and other building systems, while not placing an undue financial burden on developers. "If we don't achieve the right balance in our code changes, the city won't continue to grow."

David Eisenberg, director of the Development Center for Appropriate Technology, in Tucson, has another approach to considering the protection of life and general welfare under building regulations. He has

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been working to shift what is in the "hearts and minds of those writing and using the codes to consider their responsibility for the unintended environmental consequences of our building practices," says Eisenberg. "We made a societal decision that we need to protect people from risks attributed to the built environment, but in the process, we are inadvertently destroying the natural systems on which we all depend for our survival. With the current codes, it is much easier to build resource-intensive, wasteful, toxic buildings than to build in more sustainable ways."

Eisenberg is not suggesting that we eliminate codes or their safety standards; he is an advocate, along with many others, for sustainable building and for codes that encourage better, safer, and more environmentally responsible ways of building. "Our codes are written to keep bad things from happening; we're promoting the idea that they should also make sure the right things happen."

While Eisenberg is tackling the issue of safety on the macro level, Levitt Goodman Architects, based in Ontario, Canada, have a perspective on its definition from the micro level of a single building in Toronto. Strachan House, a housing development for chronically homeless adults, was created out of a 19th-century brick and timber warehouse. For its 70 residents, many of whom had been living secluded and isolated lives on the street, it was imperative that the building design provide individual privacy, but also that it encourage socializing. For these residents, reducing the opportunity for isolation increases their personal safety and their prospects for maintaining independence. Typical housing configurations with self-contained apartments, fire-rated corridors, and closed exit stairs were not going to support the level of visual and social communication the sponsor, Homes First, considered necessary.

With the cooperation of the mayor's office and the Toronto Building Department, their code consultant Peter Colquhoun, of Arencon, Inc., worked out a way to achieve the desired openness by designating the building a hospital. It was possible to use this designation, because the building is staffed 24 hours a day, with an array of fire detection and sprinkler systems, as well. Doors to individual units are allowed to remain open to the wide public passageways that serve as exit corridors but also contain shared living rooms and kitchens, and to the three-story atriums that anchor the ends of the building. Each floor has two fire compartments, which allows horizontal evacuation in case of fire. Even with the cooperation of the regulatory agencies, it took three years to get approvals for such an unusual configuration. And even with an exemplary track record for safety, the team did not find it possible to replicate the model and has met with outright hostility from some jurisdictions.

Although neither Levitt nor Colquhoun anticipate imminent change in the Ontario code, the Canadian National Building Code (NBC) is working toward an objective-based code. "Such a code," explains Colquhoun, "identifies objectives, like the protection of property, structural sufficiency, and life safety. It then says that the objective is to get everyone out of a building safely. It doesn't set an amount of time in which to do that, as in a performance code, nor does it tell you the width of doors and corridors, as in a prescriptive code. You are charged with getting everyone out safely, by whatever means, before the structure becomes untenable. This gives more freedom to the designers, but officials, then, need to be more knowledgeable. ■

CONTINUING EDUCATION

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INSTRUCTIONS

- ◆ Read the article "Building Regulations May Finally Shed Their Impenetrable Language" using the learning objectives provided.
- ◆ Complete the questions below, then fill in your answers (page 230).
- ◆ Fill out and submit the AIA/CES education reporting form (page 230) or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. Which is not one of the organizations that until recently developed building codes?
  a. BOCA
  b. ICBO
  c. ASPCA
  d. SBCCI

2. The model codes were a collection of standards and regulations that became law when?
  a. when they were written
  b. when they were published
  c. when they were passed by a vote
  d. when they were adopted by a governmental jurisdiction

3. Which was not a major drawback of the three model-code systems?
  a. the code may be subjected to modification for specific conditions
  b. jurisdictional overlap caused conflict in code review
  c. every local jurisdiction had a slightly different interpretation of the code
  d. architects had to design buildings to meet different codes

4. When did the three separate code-creating organizations cease to exist?
  a. 2000
  b. 2001
  c. 2002
  d. 2003

5. Benefits of the new national code are all except which?
  a. it is written in clear and understandable language
  b. it includes all of the building, zoning, electrical, and fire standards
  c. it is organized in a logical structure
  d. it is flexible in specific issues

6. Benefits of the national code to local jurisdictions include all except which?
  a. changes can be made at a local level
  b. local jurisdictions do not have the burden to update the standards
  c. code enforcement is handled at the national level
  d. code development is handled at the national level

7. The new national code is allowing for which shift in code writing?
  a. more performance-based codes
  b. more prescriptive-based codes
  c. more formulaic codes
  d. more limited codes

8. Prescriptive-based codes are best described as which?
  a. not limiting the use of materials
  b. not limiting the use of methods
  c. requiring the use of quantifiable measures
  d. requiring the use of specific means

9. Performance-based codes are best described as which?
  a. limiting the use of materials
  b. limiting the use of methods
  c. requiring the use of quantifiable measures
  d. requiring the use of specific means.

10. The purpose of building codes is which?
  a. to protect public health, safety, and welfare
  b. to prohibit architects from using new materials
  c. to keep the cost of buildings increasing
  d. to destroy the natural systems of the environment

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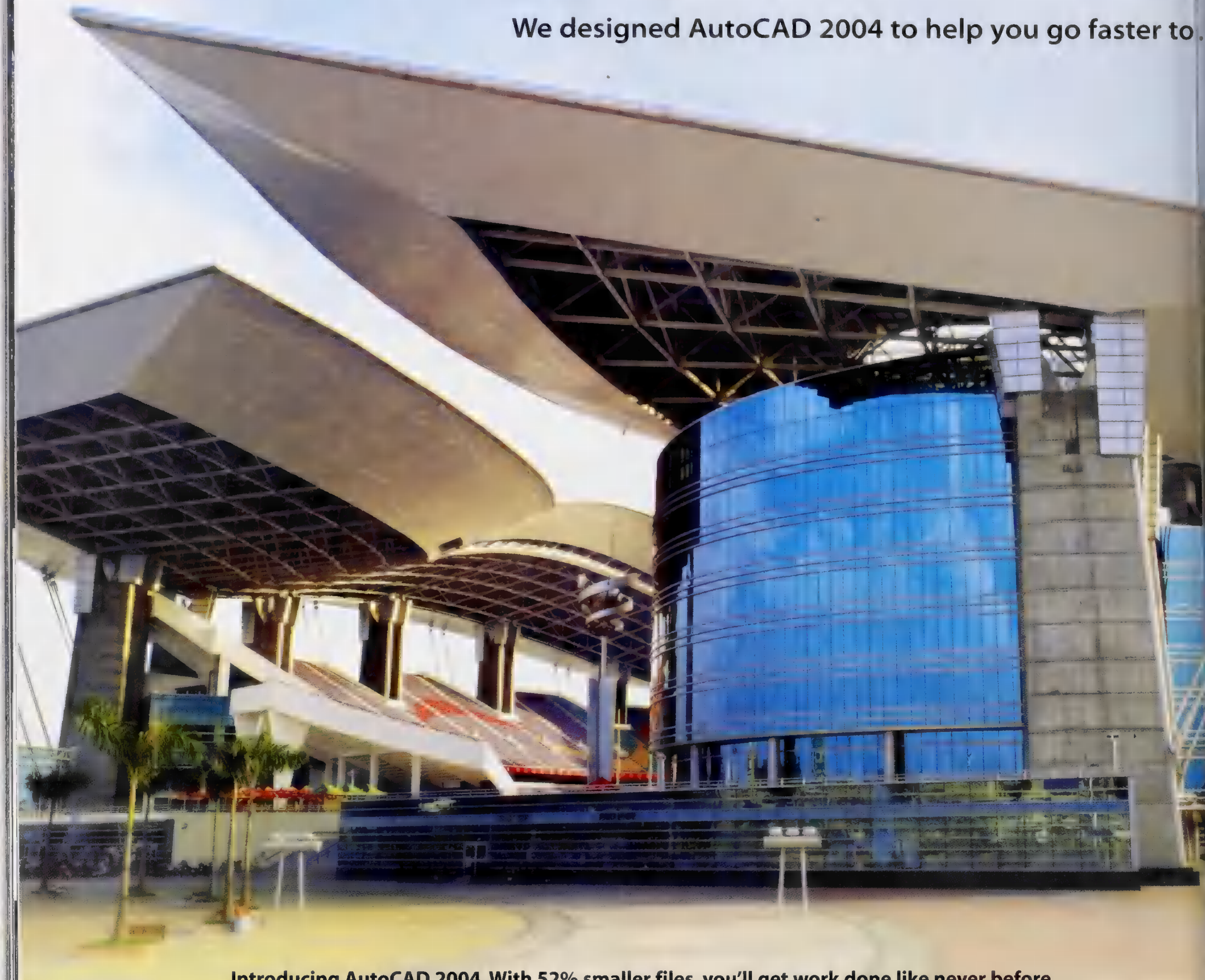

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Digital Architect

Licensing: Software by the numbers

By Alan Joch

Think of a pirate. It's not an image you might associate with architects, unless perhaps you're Bob Kruger, vice president for enforcement for the Business Software Alliance (BSA) in Washington, D.C.

The BSA, an industry group composed of software heavyweights such as Microsoft, Adobe, Apple, Autodesk, and Bentley Systems, considers anyone who makes illegal copies of commercial applications a pirate. Kruger says a "fair number" of them are CAD users within the architecture industry. "Most of the companies we investigate are not fly-by-night operations," he says.

"They're good, well-managed companies that pay taxes and obey Occupational Safety & Health Administration requirements. But when it comes to software management, they have a blind spot."

Architects are not alone. Across all industries, about a quarter of the commercial software in the U.S. is being used illegally, representing approximately $2.6 billion in lost revenues for software companies, according to the BSA. In response, the group is becoming more aggressive—some say excessively so—in enforcing licensing agreements. Currently, 500 companies are negotiating with BSA lawyers to resolve compliance issues. Over the past 12 years, the organization has received more than $83 million in penalties.

Claims can include fines of up to $150,000 for each copyright infringement, in addition to charges of two to three times the standard price for any software a violator must purchase so that the number of licenses they own is equal to the number of people using the software. In extreme cases, software vendors may attempt to recover profits attributable to their software in court, a potentially deadly blow to an architectural office that routinely uses CAD applications. License violators may also face prosecution under federal copyright laws, which carry maximum fines of $250,000 and jail time.

Getting religion

Almost all of the BSA's enforcement cases begin with a lead submitted to its "hotline" by a disgruntled employee who reports an employer that is out of compliance. If BSA investigators find merit in the claim, they usually send the alleged violator a warning letter designed to instill fear. Some letters even advise the software user to close down its business until any licensing discrepancies are resolved, says Robert Zielinski, chair of the intellectual property and information technology practice at Wolf, Block, Schorr and Solis-Cohen, a Philadelphia law firm.

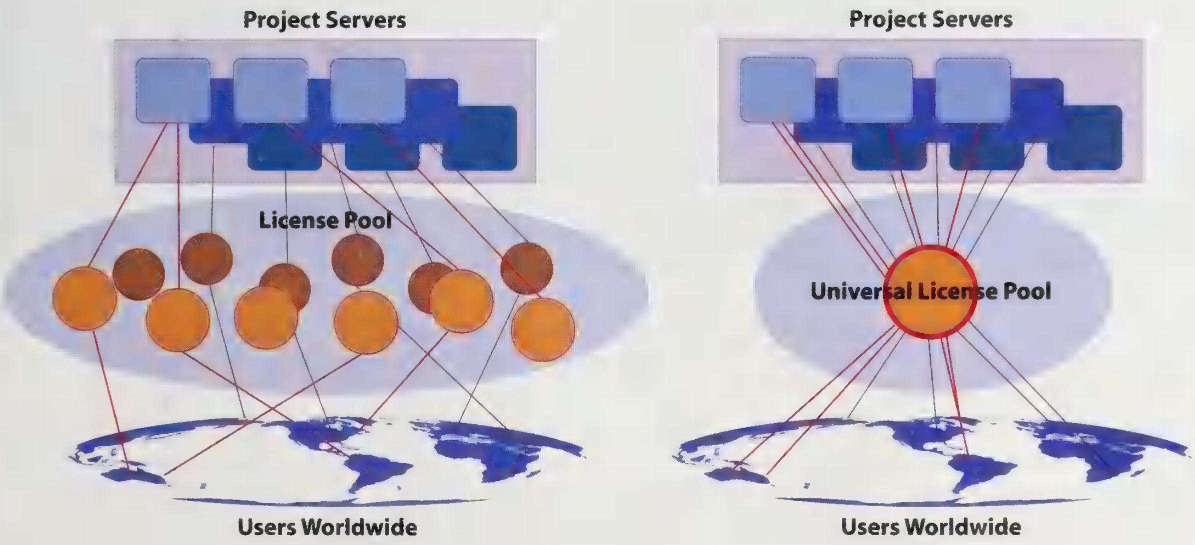
Zielinski says these letters are becoming more commonplace, with more of them going to smaller companies that may once have felt they could fly under the radar screens of big software vendors. "Before they receive a letter, these companies don't understand the importance of software licenses," Zielinski says. "But once the letter comes, they get religion very quickly."

Besides the emotional jolt, a letter can also be a budget buster, even for companies in compliance. One IT director for an architecture firm says his former employer spent almost $10,000 in staff time to document all its Microsoft software licenses after it received a compliance letter, even though they had the required number of licenses.

The BSA contends that accounting for licenses is straightforward. "You're just adding up the

Alan Joch is a technology and business writer based in New England. Contact him at ajoch@monad.net.

WWW For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at **architecturalrecord.com**.



Most software makers offer only individually licensed copies of their products (diagram, far left). But Autodesk and Bentley Systems offer network server licenses for their CAD software, in which license information resides in a single place (near left). Users are notified automatically in cases of noncompliance.

number of software programs you're using and checking it against how many software licenses you own," Kruger says. But users believe that even conscientious companies can easily run afoul of overly complex agreements. One "gotcha" comes when companies recycle old computers. For example, a designer who receives a new workstation may pass down her old computer to somebody within the administrative staff, without deleting the CAD software that was on the machine. The software may never be used again, but because it still resides on the hard drive, it may turn up as a violation in a software audit.

Other people become confused by the myriad license types offered by software companies. Some allow registered users to legally install software on both a desktop and notebook computer, while other agreements limit usage to a single computer. Also, IT managers may find themselves constantly working to keep staff members from loading software brought in from the outside. "When you have zillions of computers in a company, it's hard to make sure nothing sneaks in," says Peter Theis, IT director at Roger Ferris + Partners in Westport, Connecticut.

Of course, some noncompliance cases involve the outright disregard of agreements by companies trying to cut costs for expensive software, particularly CAD programs, which cost upwards of $2,000 to $3,000 per seat. Other scofflaws flaunt what they consider to be unfair and restrictive license agreements. For example, some agreements give software vendors the right to enter a business to perform an audit whenever it suspects a violation. "Some of this stuff is sickening," says one architect in the Northeast.

"When you use the term 'piracy,' you're making an analogy that's way over the top," says Bradley Kuhn, executive director of the Free Software Foundation, a Boston-based group that advocates the development of freely distributed "open source" software, such as the popular Linux operating system. He believes current licensing policies and "tip lines" foster distrust among coworkers, and that a new business model built on freely distributed source code is the answer to copyright infringement problems.

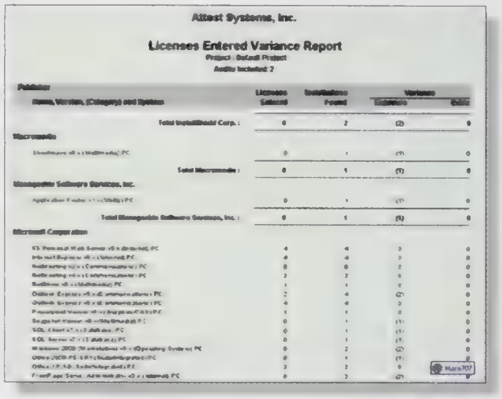
Kuhn concedes the handful of free CAD programs now under development are not yet ready for prime time, but he believes that situation could change if more professionals supported the free software movement. "If consumers took half the money they're paying for CAD licenses every year and gave it to some free software project, [open source versions] could be developed and people wouldn't have to pay for licenses anymore," Kuhn says.

Compliance strategies

Since market-ready, open-source CAD applications won't be available anytime soon, how can architects make sure their company avoids a threatening letter from the BSA enforcement division? The first step is for upper management to articulate a formal policy regarding licensing, says Ken Sanders, FAIA, chief technology officer for Gensler in San Francisco. "Architects have a reasonable expectation that clients will comply with the terms of the contracts they sign—so it's reasonable for us to comply with the software licenses we sign, even if we don't always think they're the best terms," he says.

LICENSE VIOLATIONS CAN SNEAK UP ON WELL-MANAGED FIRMS. CREATING A POLICY FOR COMPLIANCE AVOIDS SURPRISES.

In addition to communicating that philosophy to employees, Sanders says senior managers must be committed to such compliance in their own minds. "If you express ambiguity, people take cues from that," he says. "You need to sit down and talk from the standpoint of how acting this way is part of being a good citizen. You may not agree with all the copyright laws and think it's not reasonable to restrict the use of software, but at the end of day, when comes down to an agreement you have signed with another party, you must honor it."



Attest Systems, Inc.

Licenses Entered Variance Report

GASP, by Attest Systems, is one of several tools that helps firms manage software licenses electronically. The software can run reports that help IT managers determine if they have enough copies of products available for the number of users needed.

To ease the logistics of compliance, IT directors suggest purchasing network server licenses of software applications whenever possible. In this model, a predetermined number of "seats"—say 10 licenses of a CAD application for a department of 15 designers—reside on a single server. Any 10 people may use the application at a given time, but the system locks out additional users until somebody logs off. This relieves architects from constantly monitoring usage to make sure no one is using a program illegally. Currently, Autodesk and Bentley Systems offer this licensing arrangement for their respective products. However, other vendors important to architecture firms, including Microsoft and Adobe, don't provide these types of licenses. "This means we have to manually keep track of, for instance, who has Photoshop installed in each machine, which is difficult," says James Brogan, AIA, IT director for Kohn Pedersen Fox. "I'm disappointed there isn't a server license for these other software packages."

Third-party auditing programs are also available to help IT departments keep accurate records of licenses and software installations. These products include Express Software Manager from Express Metrix, KeyServer from Sassafras Software, Inventory from Altiris, TS.Census from Tally Systems, and GASP from Attest Systems. Prices are based on the number of computer users in an organization. A 100-seat version of GASP costs $22 per seat. (The BSA Web site lets companies download a free trial version of GASP, which will audit 100 computers for 60 days.)

Theis, of Roger Ferris + Partners, says architecture firms, especially larger ones, that don't make use of auditing software face "a nightmare" trying to comply with licenses. "You could spend hundreds of hours" matching what's on each computer to a master list of licenses, he says.

Keeping this information in an electronic record helps a company not only stay in compliance, but also know where it stands if an audit letter arrives. If that happens, Zielinski tells his clients to respond quickly and honestly, even if they're not in compliance. "We counsel clients never to swap out hard drives or reformat disks [to hide illegal software copies]. That only makes things worse and really makes you look guilty." Instead, he says, companies should conduct internal audits to understand how they got out of compliance and what they need to do to resolve the problem. The subsequent fines may be stiff, but this avoids walking the plank into a federal courthouse. ■

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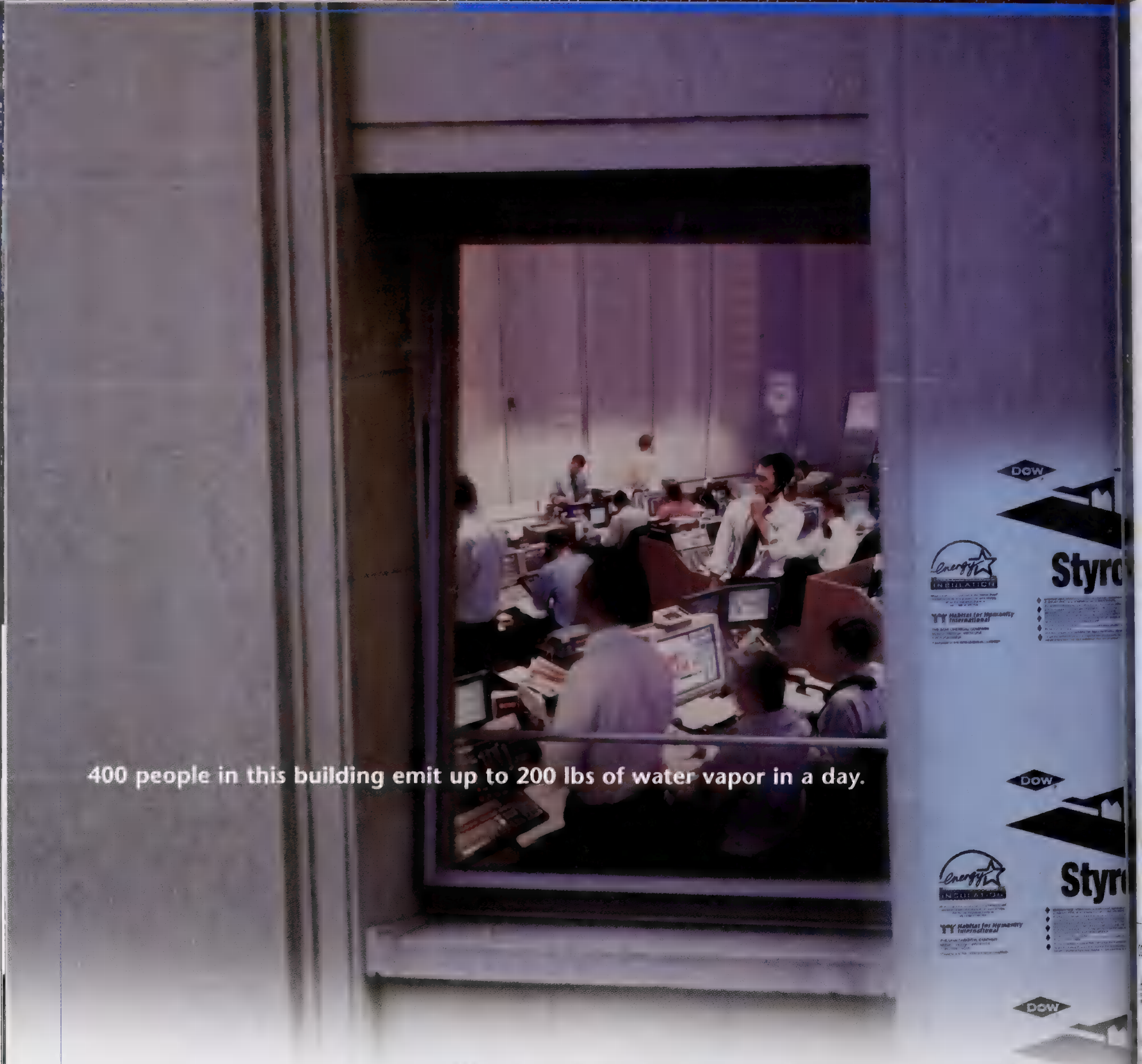
400 people in this building emit up to 200 lbs of water vapor in a day.

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Humans are about 60 percent water. It's no wonder, then, that they emit so much water vapor. When that vapor diffuses into a steel stud cavity wall, it can cause trouble. Trouble like corrosion, reduced R-value of batt insulation and indoor air quality problems.

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DOW BUILDING MATERIALS PRESENTS

Moisture Management in Steel Stud Assemblies

Steel stud assemblies are gaining increased popularity in commercial construction as part of an economical and versatile wall system. Steel studs offer many advantages such as low cost and non-combustibility. They enable a small footprint and are lightweight. However, when specifying steel stud wall systems, climate must be considered in order to control moisture and energy flow.

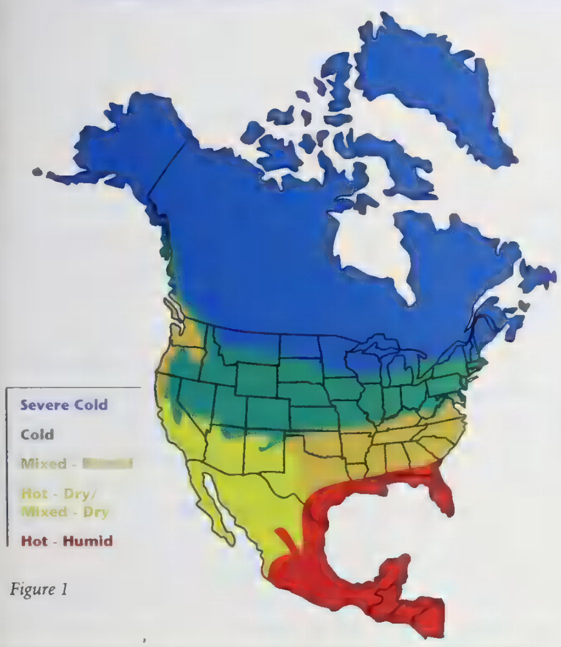

Figure 1

Designers have accepted that commercial buildings must be responsive to varying seismic risks, wind loads and snow loads, yet typically overlook variances in temperature, rainfall, exterior and interior humidity and their interaction.[1]

The hygro-thermal regions shown in *Figure 1* are determined by heating degree-days experienced throughout a normal calendar year.

Severe Cold Climates equal 8000 heating degree-days and higher.[1]

Cold Climate equals 4500 - 8000 heating degree-days.[1]

Mixed Climate equals 4500 heating degree-days and less.[1]

Severe Cold, Cold and Mixed climates experience between 20 and 60" of precipitation per year.[1]

Hot Humid Climate is the region of North America that averages a temperature of 45°F or higher throughout the year and experiences more than 40" of rain.[1]

Hot Dry Climate is the region of North America that averages a temperature of 45°F or higher throughout the year and experiences less than 20" of rain.[1]

The definition of a degree-day is as follows: *A degree day is the difference in temperature between the outdoor mean temperature over a 24-hour period and a given base temperature.* For the purposes of determining building envelope requirements, the classifications are defined as follows:[2]

(a) **Cooling degree-day base 50°F, CDD50:** for any one day, when the mean temperature is more than 50°F, there are as many degree-days as degree Fahrenheit temperature difference between the mean temperature for the day and 50°F. Annual cooling degree-days (CDDs) are the sum of the degree-days over a calendar year.[2]

(b) **Heating degree-day base 65°F, HDD65:** for any one day, when the mean temperature is less than 65°F, there are as many degree-days as degree Fahrenheit temperature difference between the mean temperature for the day and 65°F. Annual heating degree-days (HDDs) are the sum of the degree-days over a calendar year.[2]

Building envelopes and mechanical systems (HVAC) should be designed to work together based on each specific hygro-thermal climate.

How Moisture Accumulates in Steel Stud Assemblies

Moisture works its way into a wall system in a variety of ways. It can diffuse through the components of the wall system in the form of vapor. Vapor can also be carried into the wall cavity by air infiltration or air exfiltration. Water that leaks in through the roof or through wall flashings will also enter the wall system. Let's look at each of these issues in more detail.

Vapor Diffusion is the process by which water vapor migrates through a wall system and its components such as gypsum, building wrap, insulation and paint. Each component of the

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Moisture Management in Steel Stud Assemblies.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 199, then follow the reporting instructions on page 234 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *learn how moisture accumulates in steel stud/frame wall cavities.*
- *learn about some of the design challenges associated with steel stud walls systems.*
- *participants will be able to evaluate and specify methods that reduce moisture build-up in steel stud walls assemblies based on specific geographical location.*

wall system has a perm rating. The International Building Code (IBC) says that a material with a perm rating of 1.0 or less is a vapor retarder.

In Severe Cold and Cold climates diffusion from the interior side of the wall is common. In winter conditions, the vapor drive is typically from inside to outside. Moisture in the form of vapor can diffuse into the wall cavity, especially if the perm rating(s) of the material(s) on the interior side of the steel studs are greater than 1.0.

In Hot Humid and Hot Dry climates diffusion from the exterior side of the wall is common. In summer conditions, the vapor drive is typically from outside to inside. Moisture will diffuse into the wall cavity, especially if the perm rating(s) of the material(s) on the exterior side of the steel studs are greater than 1.0.

In Mixed climate, walls get the benefit of both internal and external vapor drive based on the time of year and season.

Real life example: 400 occupants in a typical commercial building can emit up to 200 lb. of water vapor into the air per day. This water vapor can diffuse into the wall cavity and may contribute to a breeding ground for mold and decay.

Diffusion from the exterior side of brick veneer walls is also common in all climates. In spring, summer and fall, wind-driven rain can be absorbed by brick veneer. This moisture is then stored inside the masonry layer. After the storm, as the sun heats up the brick, the moisture turns to vapor in the brick cavity and is driven into the wall system.

Exfiltration refers to the physical movement of air from the interior towards the exterior as a result of an air pressure difference. The pressure difference can be caused by wind effects on the building envelope. While moisture diffusion occurs on a molecular level, moisture movement by exfiltration occurs when the indoor air physically moves through commonly occurring penetrations like unsealed openings, joints in the interior vapor/air barrier, electrical outlets, etc.

Infiltration refers to the physical movement of air from the exterior towards the interior as a result of an air pressure difference. While moisture diffusion occurs on a molecular level, moisture movement by infiltration occurs when the outdoor air physically moves through commonly occurring penetrations like unsealed sheathing joints, joints in the exterior vapor/air barrier, window openings and flashings. Most building codes require a maximum of air infiltration rate of 0.06 $ft^3/min \cdot ft^2$ for commercial buildings.

The potential for vapor movement by exfiltration and infiltration is many times higher than diffusion due to the slowness of the diffusion process.

The air pressure difference between the inside and the outside of a building can effect how much moisture gets driven into the wall cavity. If the air pressure is greater on the warm side of the wall, vapor will be driven into the wall cavity. It is best from a **moisture perspective** to keep the warm side of the wall at a slightly lower pressure than the cold side since cold air generally holds less moisture than warm air.

Condensation

When the actual temperature drops below the dewpoint temperature inside the wall cavity, condensation can occur if water vapor is present. The temperature of the interior side of the exterior wall sheathing and the steel studs are the most important surfaces to consider. The inside of the exterior sheathing and the steel studs are not insulated in today's commonly specified systems. This makes them more likely to be colder than other components in the wall system. Today's most commonly specified systems have 6" steel studs 16" on center with 1/2" interior gypsum board, R-19 fiberglass insulation, 5/8" exterior grade gypsum sheathing on the exterior with some kind of building wrap. This wall is referred to as the **baseline wall system** as we move through examples in this course. The R-19 fiberglass does a good job of keeping the interior of the building warm where there are no studs. However because the exterior sheathing board is on the outside of the glass fiber batt insulation, it is essentially at the same temperature as the exterior air. This theory applies to Cold climates. In Hot climates the reverse is true. It is the exterior side of the interior sheathing and the steel studs that are the most important surfaces. This is because the cool side of the wall is toward the interior of the building.

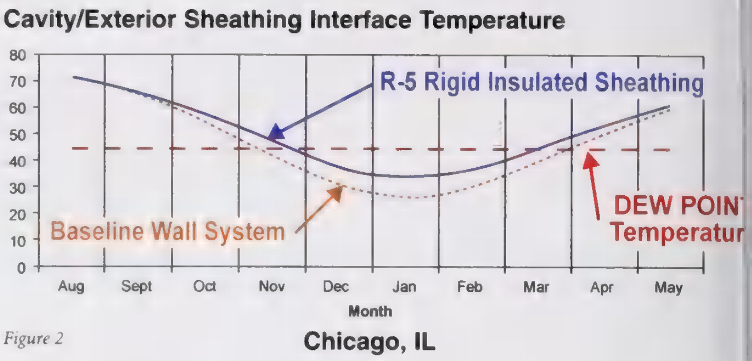

Figure 2

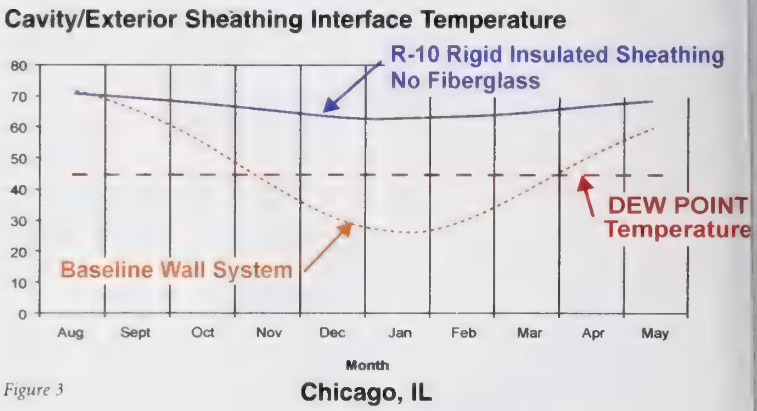

Figure 3

Let's look at an example of the baseline wall system and how it performs over an average year in a Cold climate—like Chicago. To evaluate how each of the wall systems in the course will perform over time, an Excel spreadsheet was set up using a typical temperature difference and thermal resistance calculation. We then compare the temperatures of each surface in the wall system against the dewpoint temperature. Note that the dewpoint temperature also changes as you go through the wall system, depending on temperature and humidity level at each surface interface. If the outside temperature is 14 degrees F and the indoor temperature is 70 degrees F, the interior side of the exterior sheathing will be about 24 degrees. With an interior relative humidity of 40% we can expect moisture to condense on the inside of the exterior sheathing and the steel studs. This is because the surface temperatures of these components are below our dewpoint temperature range of 37 to 45°. We get these dewpoint figures from a standard dewpoint chart. If this happens day after day, a semi-wet environment can be created. This example is a point in time snapshot of what can happen, so let's take it to the next level. If we take ASHRAE weather data for the city of Chicago and look at how the baseline wall system will perform over the course of a typical year, we can show the possibility of moisture build-up from early November to late March (*Figure 2*). This can result in five months of moisture build-up potential. So what is the solution?

To manage moisture we can try to warm up the wall cavity and its components so that they all stay above the dewpoint temperature. If we can get this to happen, the water vapor will never condense. Let's look at the baseline wall system example again. Except this time we install a 1" R 5.0 layer of rigid insulation over the exterior gypsum sheathing. The results show that we can shorten the time frame during the year when moisture has the likelihood to condense and accumulate by about 1 month (*Figure 2*). This solution isn't great because we still have four months out of the year where moisture build-up can occur. However, if we take the fiberglass out of the wall cavity and increase the amount of rigid insulation (R 10.0) we apply to the exterior side of the wall, we almost eliminate the potential for condensation to occur in the wall cavity (*Figure 3*). The reasons this happens are twofold. First, there is more even insulating power over the entire wall system, not just between the studs. It keeps the effective r-value of the wall system higher than that of the baseline wall system. Second, by removing the fiberglass insulation, it allows the steel studs and exterior gypsum sheathing materials to warm up to nearly the temperature of the interior of the building.

Wetting & Drying

All wall systems will experience moisture during their useful life. Diffusion, infiltration, exfiltration, leaks from window flashings and roofs, and defects in labor are all ways moisture gets into a wall cavity. Prolonged periods of severe weather conditions, hot or cold, can also produce large amounts of moisture build-up.

The key in designing an effective wall system is allowing it to dry out when it gets wet. Drying can take a long time to occur. One recommendation is to seal the exterior side of the wall as tight as possible while leaving the inside permeable enough to dry. This recommendation works in all climates. How can you accomplish this?

The first thing you can do is take the fiberglass insulation out of the wall cavity. The fiberglass thermal insulation decreases the flow of energy through the wall, decreasing the rate of drying. Without fiberglass insulation, the wall cavity and all of its components remain at relatively the same temperature as the inside of the building. The wall cavity becomes conditioned space, which leads to less moisture build-up and better drying capabilities.

The second thing you can do is specify an air barrier membrane on the exterior side of the exterior gypsum sheathing. An air barrier membrane will prevent most of the exterior moisture from entering the wall cavity. If some moisture does get in, the wall cavity is empty conditioned space. This leads to better drying capabilities.

Mold

Mold is not necessarily harmful. However, concerns have been raised regarding the health effects of certain strains of mold on susceptible people. Individuals with existing medical problems or suppressed immune systems may risk infection.[3,4,5,6] In general, molds demand a favorable combination of the following conditions to germinate, sporulate, and grow:

- Fungal spores settling on the surface
- Oxygen availability
- Optimal temperatures (40 – 100°F)
- Nutrient availability
- Moisture (liquid or relative humidity above 70%)

The first four conditions are met in almost every building. The key remaining factor is moisture, which may be managed by adhering to the sound construction practices discussed in this AIA course.

Since mold can grow in wall cavities where the relative humidity level is 70% or higher, it is imperative in Hot Humid climates to keep the humidity to the outside of the building. Conditioning the air in the wall cavity is one of the best ways to manage the humidity level in that space.

Thermal Performance

The current IBC, ICBO, SBCCI and BOCA building codes all refer to the American Society of Heating and Air Conditioning Engineers (referred to in this course as ASHRAE) 90.1 code for energy compliance. The International Building Code requires that designers reference ASHRAE 90.1–1999 version. The 1999 version requires that walls in most Cold, Mixed, Hot Humid and Hot Dry climates areas of the United States meet a minimum R-Value requirement of **8.10**. The 1999 version requires that walls in most Severe Cold climates areas of the United States meet a minimum R-Value requirement of **15.6**.

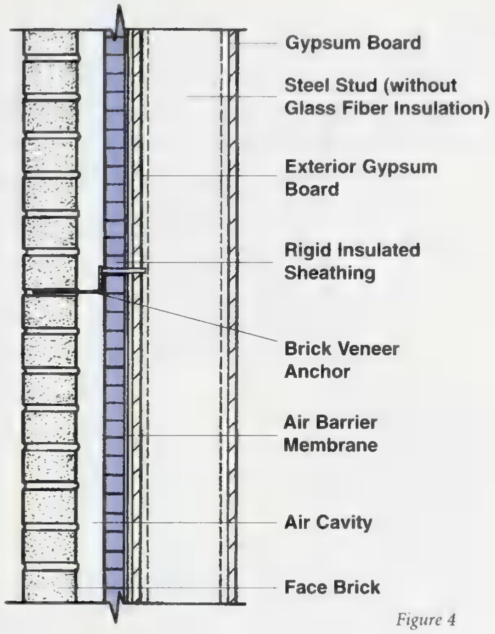

Figure 4

Steel Stud Cavity Wall with Interior and Exterior Gypsum and Uninsulated Stud Cavity

Because of the conductivity of steel, ASHRAE requires that architects use a factor in calculating the effective thermal performance of fiberglass insulation in steel stud walls. For example, in the baseline wall system with 6" steel studs 16" on center, the R-19.0 fiberglass is factored by 40%. This results in an effective r-value of 7.6 (19.0 x .40 = 7.6). When using rigid insulation on the exterior side of the wall, ASHRAE gives full credit for the manufacturer's published R-value because there are less thermal shorts when insulating by this method.

In most cities in the United States, the baseline wall system will meet the minimum ASHRAE code requirements because of the additional insulating value that you get from the other wall components. However, in Severe Cold climates, you need to pay more attention because the minimum requirement jumps substantially to 17.54. In these locations the only way to meet code is to use insulated sheathing on the interior or exterior side of the wall.

Fire Performance

The International Building Code requires UL-rated wall assemblies only when buildings are 30 ft. or closer to each other. Most commercial buildings are not with 30 ft. of each other. Therefore there is not a need for a fire-rated wall assembly in most cases. When there is a need for a rated wall assembly, please refer to the UL design manual for recommendations.

Sound Transmission

When changing the component make-up of a wall system, you must consider what effect the changes will have on the interior environment as it relates to sound. The baseline wall system with a 4" brick veneer will perform relatively well in keeping the outside sound out of the interior space. This system has a Sound Transmission Coefficient (STC) of 63. By taking the fiberglass out of the cavity space and insulating with thick rigid foam on the outside of the cavity (*Figure 4*), the STC is lowered to approximately 60. The amount of insulation put on the exterior will affect the final result, but not dramatically, once you get over 1 $^{1}/_{2}$" thick material.

Recommendation

There are several ways to design steel stud walls and control moisture build-up. The recommendation in this course only looks at one way. This system can be used in all climates and only differs in the thickness of insulation needed. Refer to *Figure 4* for a cross section detail of this recommended system.

Working from the inside out, the recommendation is to leave the wall cavity empty so that it becomes conditioned space. The exterior grade gypsum sheathing stays in the system to help wrap up the building quickly and give time for the interior work to start. An air barrier membrane is specified to attempt to eliminate moisture from entering the cavity from the exterior side, and a minimum R-7.5 rigid insulation is required on the exterior side to meet the energy code requirements in most climates. The insulation will keep all of the wall components, except for the brick veneer, close to the inside temperature and humidity levels. This leads to better moisture control and drying capabilities. The R-value recommendations per climate are as follows:

Severe Cold Climate: R-15.0

Cold Climate: R-12.5

Mixed Climate: R-7.5

Hut Humid Climate: R-7.5

Hot Dry Climate: R-7.5

Different variations can be made where it makes sense to do so based on climate. For example, in Hot Dry climates, it may not be necessary to use an air barrier membrane because in general, the level of relative humidity is so low. This would apply to the southwestern United States. In this case, a good building wrap would stop bulk water from entering the cavity. Any water vapor that does enter the wall system will enter into conditioned space and most likely dissipate before it has a chance to condense.

Let's take this recommendation and look at some modeling examples for cities in three different climates. For the Severe Cold climate we look at Minneapolis, Minnesota. For the Cold climate, Philadelphia, Pennsylvania is our choice, and for our Mixed climate example, St Louis, Missouri. In each model we are comparing the baseline system against our recommended system.

The modeling will use ASHRAE weather data to predict when the potential for moisture build-up is likely to occur during a typical year. *Figures 5, 6 & 7* depict how each system is predicted to perform.

In Minneapolis the results are similar to our Chicago example. The baseline wall system has a potential for condensation from early November to early April, or a 5-month period. In Philadelphia and St Louis the potential for condensation is from early December to early March, or a 3-month period using the baseline wall system. The recommended system keeps the potential for condensation very low in all three climates. The key point to remember is that these predictions are based on average ASHRAE weather data. If we run into severe winter conditions like winter 2002-2003, the potential for moisture development only increases.

Summary

Controlling moisture in wall cavities is extremely important to the long term health and durability of the wall system. No matter what climate your building is in, water will find its way into the wall through diffusion, exfiltration, infiltration, or leaks. In Severe Cold, Cold and Mixed climates, this water can condense time after time, creating a semi-wet environment. In Hot Humid and Hot Dry climates condensation can also occur.

Mold can grow when a favorable combination of the 5 conditions exists:

- Fungal spores settling on the surface
- Oxygen availability
- Optimal temperatures (40 – 100°F)
- Nutrient availability
- Moisture (liquid or relative humidity above 70%)

Even if water in a liquid state does not exist, mold can advance. A relative humidity level of approximately 70% or higher can create an environment for mold to germinate, sporulate, and grow.

The key to controlling moisture build-up is to limit the amount of water that enters the wall cavity from the exterior side of the building and manage the environment in the cavity space to ensure proper drying of the wall system. By following the recommendations in this course, your wall systems will have a better chance of longevity and performance.

Design A **Severe Cold Climate**
Cavity/Exterior Sheathing Interface Temperature

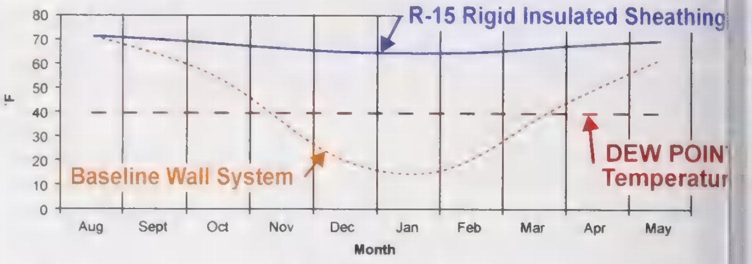

Figure 5

Minneapolis, MN

Design A **Cold Climate**
Cavity/Exterior Sheathing Interface Temperature

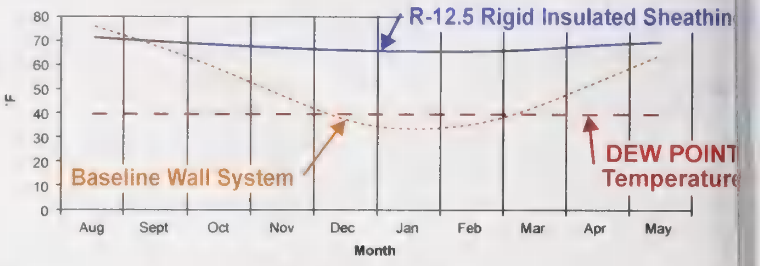

Figure 6

Philadelphia, PA

Design A **Mixed Climate**
Cavity/Exterior Sheathing Interface Temperature

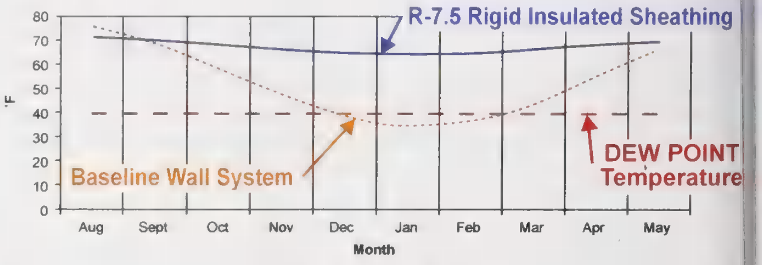

Figure 7

St. Louis, MO

Footnotes

1. Building Science Corporation, www.buildingscience.com, Site dated March 4, 2003.
2. ANSI/ASHRAE/IESNA Standard 90.1-2001, Energy Standard for Buildings Except Low-Rise Residential Buildings, copyright 2001 American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.
3. "Mold Resources," U.S. Environmental Protection Agency, www.epa.gov/iaq.pubs/moldresource.html, Site dated April 4, 2001
4. "Indoor Air Quality Info Sheet," California Department of Health Services, www.cal-iaq.org/mold9803.html.
5. "Mold Control in the House," Johns Hopkins University Asthma and Allergy, www.hopkins-allergy.org/rhinitis/therapeutics-house.html.
6. "Questions and Answers on Stachybotrys chartarum and Other Molds," Center for Disease Control and Prevention (CDC), www.cdc.gov/nceh/asthma/factsheets/molds/default.html, dated July 6, 2001.

Click for Additional Required Reading

As part of the CES Learning Activity, you are required to read additional material online. To access the material on effective R-valve, structural considerations, and alternative wall systems, visit ***archrecord.construction.com/resources/conteduc***. To obtain a faxed copy of the supplemental material, please contact Joe Barrow at jbarrow@dow.com. The test below includes questions derived from the online material.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- learn how moisture accumulates in steel stud/frame wall cavities.
- learn about some of the design challenges associated with steel stud walls systems.
- participants will be able to evaluate and specify methods that reduce moisture build-up in steel stud walls assemblies based on specific geographical location.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 234. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Diffusion from the interior side of the wall is common in which:
A: a. Severe Cold and Cold climates
b. Hot Humid climates
c. Hot Dry climates

Q: 2. 400 occupants in a typical commercial building can emit up to how many lb. of water vapor into the air per day?
A: a. 100
b. 150
c. 200

Q: 3. From a moisture perspective, it is best to keep the warm side of a wall at which pressure in comparison to the cold side?
A: a. Slightly lower pressure
b. Slightly higher pressure

Q: 4. Which generally holds less moisture?
A: a. Warm air
b. Cold air

Q: 5. Exfiltration refers to:
A: a. Physical movement of air from the interior towards the the exterior
b. Water vapor migrating through a wall system
c. Physical movement of air from the exterior towards the interior

Q: 6. The inside of the exterior sheathing and the steel studs are not insulated in today's commonly specified systems.
A: a. True
b. False

Q: 7. The exterior side of the interior sheathing is the most important surface in which climate?
A: a. Hot Humid
b. Cold
c. Severe Cold
d. Mixed

Q: 8. The key to designing an effective wall system is to:
A: a. Keep all moisture out of the building
b. Maintain a consistent temperature within the wall year round
c. Allow it to dry out when it gets wet

Q: 9. Fiberglass thermal insulation does which:
A: a. Decreases the flow of energy through the wall and can decrease the rate of drying
b. Increases the flow of energy through the wall, increasing the rate of drying

Q: 10. Most conditions for mold growth exist in almost every building. Which condition is the easiest to control with sound construction practices?
A: a. Fungal spores settling on the surface
b. Oxygen availability
c. Nutrient availability
d. Moisture (liquid or relative humidity above 70%)

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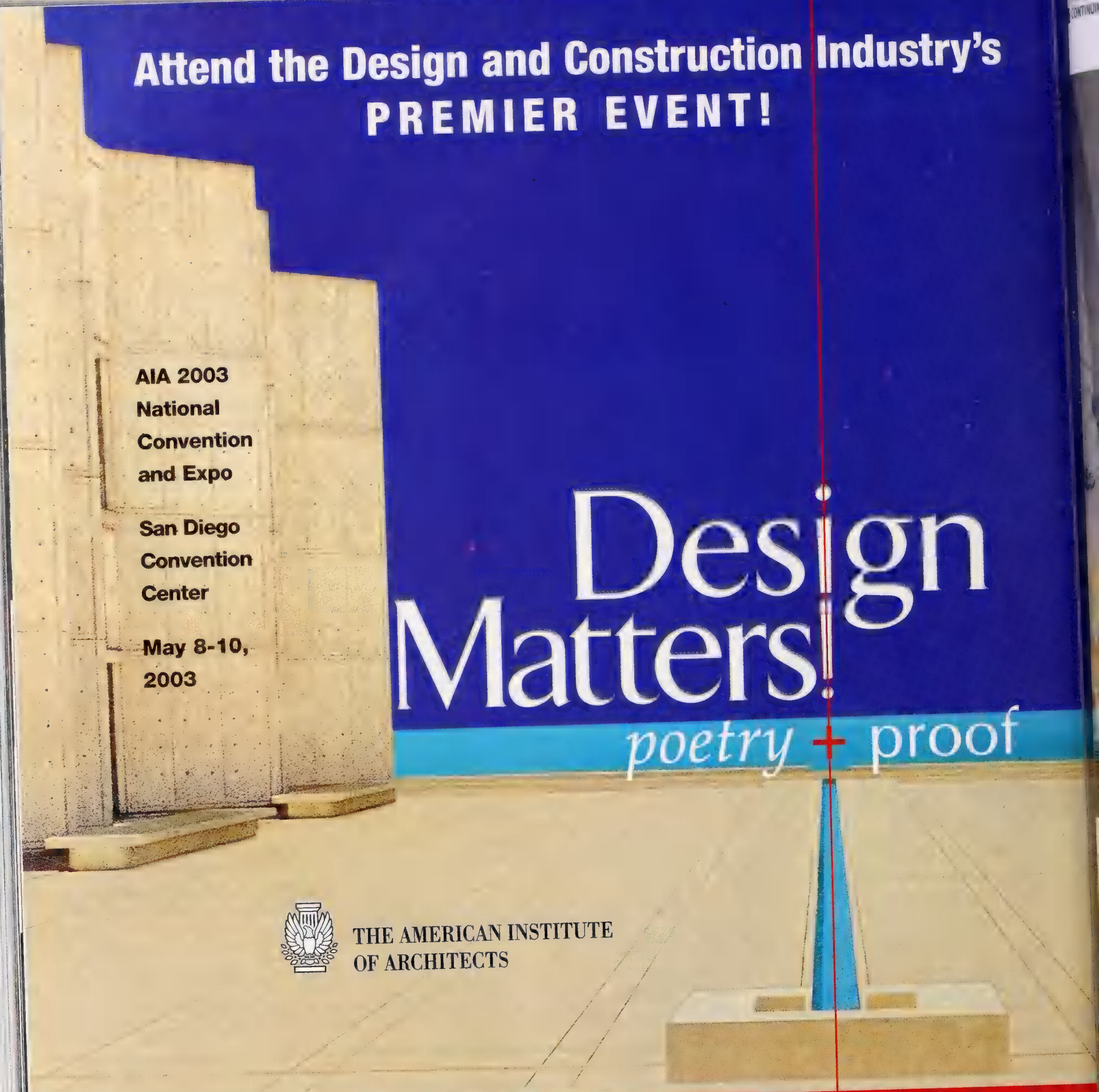

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THE MARBLE INSTITUTE OF AMERICA PRESENTS

The Beauty of Natural Stone

Elegant, enchanting, enduring and more affordable than ever before

The use of natural stone has skyrocketed. Its popularity, especially for interiors, is at a record level, driven in part by technological advances in its fabrication.

"For our office, stone is a critical element in almost every design we do," says Joshua Zinder, project manager at Princeton, N.J.-based architectural firm Michael Graves & Associates. "It's one of the places we like to start a project."

"The most exciting thing about the stone industry today is the increased acceptance of marble and granite by many users, for new and different as well as traditional applications," says Vincent Migliore.

Migliore's family interest in stone dates to 1843, and Migliore has worked all ends of the trade. Today he is a fee-based consultant and president of Empress Migliore SPA, Phillipsburg, N.J., and technical director for the Marble Institute of America. "The market has gone crazy," he says. Stone is being used as never before.

"The cost of stone has come down substantially as a percentage of building costs," Migliore says. "Its cost today is lower than it was 10 years ago."

"Technological advances in all areas of stone production – quarrying, fabricating, and especially installing – have dramatically reduced the cost of using stone." says Rich Booms, president of the Marble Institute of America and owner of Redford, Mich.-based Booms Stone Co.

"New, automated machinery allows us to cut stone thinner, at less cost, and more consistently," Booms says. "The development of new anchorage systems makes installation easier, quicker, and more secure, and that, too, has driven prices downward. If we can install 30 pieces per day, instead of 15, the cost to the owner goes down by that amount."

Contemporary cladding systems make it possible to use panels as little as $^3/_4$-in. (2 cm) thick, with a notable reduction in the cost of stone.

Polished slabs of 2 cm-thick granite now sell for between $22 and $42 per sq. ft., depending on the color; rough 2 cm-thick slabs of marble, between $8 and $36 per sq. ft. Patterned edge material can cost from $12 (for a square edge) to $62 (for something as complex as a "reverse glacier" edge) per lineal foot.

Modular thin stone tile, a product of modern technology that is cut to a thickness of only $^3/_8$-in. (1 cm), is suitable for many applications in which panels might previously have been specified, but is generally used on interior floors and walls.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **The Beauty of Natural Stone.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 205, then follow the reporting instructions on page 236 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *gain a greater understanding of how to select natural stone.*
- *learn of some of the characteristics of various natural stone building materials.*
- *have a sense of how to avoid some common problems when using natural stone.*

Nauvoo Temple in Illinois features hand-tooled and intricately carved limestone in six different finishes.

"For interior use, granite is now routinely less expensive than any of the dozen or so manufactured granite look-alikes," says Booms. There is considerable disparity between regions, but U.S. sq. ft. prices for installed granite countertops are between $40 (in the South) and $60 (in the North).

"Stone," says Zinder, "has a permanence about it, a certain majesty. It is almost always our first choice for exteriors and for interior floors. Regrettably, far too often, that element of the design gets engineered out. But I think that will change because there are a lot of stone products on the market that you can use where you couldn't before. New aluminum honeycomb backing systems, for instance, now allow the use of thinner stone, with no aesthetic drop-off.

"Our clients," says Zinder, "want stone in a particular room, or a particular setting, and they are often willing to cut costs in other places to keep stone in the project."

Cladding contractor Masonry Arts, Inc., Bessemer, Alabama, one of the firms that reconstructed the Pentagon following the 9/11 attack, was the Marble Institute of America's 2002 Pinnacle Award winner for commercial interiors for its role in the construction of Our Lady of Angels Monastery in Hanceville, Alabama. The monastery is an eloquent expression of the luxuriousness of stone (See picture on page 165).

Judges said of the project, which replicated 13th century detail and was five years in construction, "this job exemplifies true marble craftsmanship. The scale of the project and elaborate detailing make it a real work of art."

"There hasn't been a church built like this since the beginning of the last century," says Masonry Arts owner Roy V. Swindal.

In the online section of this continuing education section, Swindal offers advice on selecting and working with stone.

The Market

Despite a nationwide decline in commercial construction, the residential sector, fueled by a continuous dose of low interest rates, is enjoying a near-record run.

The number of U.S. households with an annual income of more than $100,000 has increased from three to seven percent over the past five years.

The Washington, D.C.-based National Association of Home Builders (NAHB) reported in February that work on new homes and apartments reached a seasonally adjusted annual rate of 1.85 million units in January (based on U.S. Commerce Department figures), the fastest pace in 16 years, and the highest best single-family housing production in 24 years.

New single-family homes were constructed at a seasonally adjusted annual rate of 1.51 million units in January. "This was up 2.1 percent from December's strong number and the fastest production pace since November of 1978. It also is just shy of the fastest construction pace on record – 53 million single-family units started in December of 1977," said NAHB President Kent Conine, a home and apartment builder from Dallas, Texas.

From 1994 through 2001, U.S. homeowners spent an average of $20 billion per year on kitchen and bath remodels.

Those factors have led to a robust market in natural stone. According to the U.S. Geological Survey, 1.22 million metric tons of domestic stone, valued at $263 million, were produced in the U.S. in 2001. In October 2002, the last month for which figures were available, imports of granite and marble to the U.S. reached $93.7 million. Italy, by virtue of the fact that it is the oldest and most respected processor of marble and granite, was the source of the greatest dollar volume of imports. Brazilian granite exports to the U.S. of more than 36,300 tons, however, nearly doubled Italian exports to the U.S.; China was third.

Turkey, in October 2002, exported 28,286 tons of marble to the U.S., nearly twice the volume of Italy. Mexico was the third-leading exporter of marble to the U.S.

Stone selection once was limited to what was locally available. Today's stone marketplace, however, is virtually worldwide, and new sources of stone are emerging outside traditional markets.

"Italy and Spain are still the hubs of the international stone market," says Booms. "The products from the Far East are not the most glamorous on the market, but they are very competitively priced."

Natural Stone

The universally used genetic classification of stone recognizes three kinds of stone: igneous, metamorphic, and sedimentary, and all are used in construction.

Igneous rocks are solidified from molten material. If the molten material solidifies deep in the crust, it will cool slowly and produce the crystalline, intrusive igneous rocks valuable as natural stone. Granite, gabbro, and basalt are examples of igneous rocks.

Sedimentary rock includes limestones, travertines, and sandstones formed by the accumulation of materials settling in basins and sea beds and becoming compacted over millions of years.

Each Nauvoo Temple sunstone was hand-carved from a 6,000 lb. block of limestone.

Ten granite fingers adorn the front entrance of the Phillips Plastics Custom Facility in Wisconsin.

Limestone, used throughout the world as a building material, is found in colors ranging from dead white to jet black and many colors in between. Some limestones are hard and dense; others are soft and relatively porous. Harder limestones may take a polish; softer ones will not.

Travertines are a crystalline form of calcium carbonate, developed in layers deposited near cold and warm mineral springs. Characteristic holes were formed by the percolation of mineral water through the deposit over millions of years. Travertines, too, vary widely in hardness, density, and porosity. They are typically light to dark beige and many can be polished to a high gloss.

Sandstones are composed primarily of quartz crystals bonded together with silicon, calcium carbonate, or iron oxide. The color is determined by the percentage of iron oxide.

The third classification of stone, metamorphic rocks, are rocks transformed from other rock types into marbles, slates, quartzites, soapstones, schist, and gneiss. Marbles are formed primarily of dolomite and calcite with a wide variety of other minerals contributing to color and texture. Marble began as limestone, and the colors, textures, and veining are produced through metamorphic activity. Commercially, any stone (except granite) capable of taking a polish is called marble.

Among the natural stones, two are highly popular as ornamental building stones:

Granites: Are igneous rocks derived from molten masses or magmas, the chief minerals of which are feldspars and quartz and smaller amounts of mica and horblende. They are classified as fine-grained, medium-grained, or coarse-grained.

Medium-grained granites contain feldspar crystals that average about $^3/_4$-in. in diameter. If relatively coarse-grained granite appears in a fine-grained groundmass, the rock is designated as a porphyritic granite.

The color of granite is governed largely by the color of the feldspar, usually the most abundant mineral. Near-white, dark gray, green, light gray, pink, and red granites are common, but granites of other colors are becoming common. Uniform color distribution has traditionally been a desirable feature. However, many of today's granites exhibit veining movement and artistic background color variations.

The term "texture" as applied to granite means size, degree of uniformity, and arrangement of constituent minerals.

The texture of granite signifies the size and arrangement of mineral grains. Uniform grain size usually is demanded in commercial granites. Uniform distribution of the minerals is as important as uniform grain size.

Granite surfaces may be finished in a number of ways. In general, smooth finishes tend to emphasize color and veining; rough finishes tend to disguise the veining or markings.

Marble: Is a metamorphic rock resulting from the recrystalization of limestone caused by heat and pressure, making marble a more dense stone capable of taking a polish.

The color, veining, clouds, mottlings, and shading of marble are caused by substances included in minor amounts during formation. Iron oxides make pinks, yellows, browns, and reds. Most blacks, grays, and blue-grays are of bituminous origin. Micas, chlorites, and silicates cause greens.

Grains of calcite, the chief constituent of most marbles, are crystalline and have definite cleavage that shows bright reflecting faces on a broken surface. In most marbles, the grains are elongated in one direction, giving marble a definite grain.

In general, marbles are classified into four groupings that should be taken into account when specifying marble: The groups—*A, B, C & D*—are classified exclusively on the basis of their solidity and on the stone's working characteristics, and in no way refer to the quality of the stone in a particular group.

Group A marbles are sound, with favorable working qualities. They contain no geologic flaws or voids that would require filling or patching and may be used for interior or exterior applications.

Group B marbles may be expected to contain small holes or voids which may be filled with epoxy, shellac, or polyester resin through processes known as "waxing" or "sticking." Waxing refers to the practice of filling minor surface voids with melted shellac, cabinetmaker's wax, or certain polyester compounds. (It does not refer to the application of paste wax to the surface to make it shinier.) Sticking describes the butt-end repair of a broken piece of stone, now generally done with dowels, cement, or epoxy. Filling of imperfections within this group most likely will not be noticeable.

Group C marbles commonly have blemishes, the result of impurities that have not changed into other minerals during formation. This is the largest and most colorful group of marbles. With this group, it is standard practice to repair the variations in structure through reinforcing, liners, sticking together, filling with resin or cement, and other procedures that render the stone suitable for architectural purposes.

Group D marbles contain a larger number of natural faults than the previous category and require more finishing.

Marble may be finished in a number of ways. In general, as with granite, smooth finishes tend to emphasize color and veining; rough finishes tend to subdue those markings.

The translucency of marble is one of its most intriguing attributes. Not all marbles, however, possess this quality. Translucence is dependent upon the crystal structure of the stone, its color (white and lighter-colored marbles are generally more translucent), the thickness of the material, and its surface finish (smooth finishes emphasize marble's translucence). Translucent marbles can be used to diffuse light, may act as a translucent countertop surface, and have other applications when properly backlit.

Stone Selection

"Uniformity of material," when applied to natural stone, whether marble, granite, limestone, or slate, is a term of relative value that needs to be understood when making a selection. And designers must first be aware that because building stone is a natural material, quarried and cut from blocks, then finished, material even from the same quarry may vary greatly in color, texture, and porosity. Materials quarried over even a six-month period from the same site may differ. It is crucial, therefore, that before making a final selection, designers be certain they have access to enough stone to finish a project.

For ease and economy, modular stone tiles offer a good option to stone panels for interior walls and floors. Thin stone tiles, varying in thickness from 1 cm to 1.5 cm, are available in modular sizes of 12 in. X 12 in. to a maximum of 24 in. X 24 in. The final look with such tiles, however, may fall short of expectations with regard to appearance, especially if the stone is variegated and veined, and tiles from different boxes should be mixed by the installer to ensure a pleasing result.

A most important concern when selecting stone for exterior applications is strength. This is especially true when selecting stone for exterior cladding over two stories. In selecting stone for exterior cladding, the engineering characteristics should be the determining factor in the final selection. Exterior stones must be able to withstand these stresses:

- weight load to be borne by anchorage systems;
- wind shear;
- humidity, which must be released to prevent problems with condensation and "efflorescence," the crystallization of naturally occurring salts through evaporation;
- freeze/thaw cycles, which can cause stone to crack and joints to fail;
- structural contraction that occurs during the curing stage of concrete;
- permanent structural distortion, which takes place progressively until the structure has settled;
- elastic distortion, which can be caused by movement produced by load changes on the structure;
- thermal expansion and contraction, which affects stone and other structural elements at different coefficient points and which can cause problems of stability.

Where structural capability is critical, test data for compressive strength, flexural strength, modulus of elasticity, and sheer strength should be studied. Where weather is a factor, absorption, porosity, and permeability studies should be made, along with freeze/thaw compressive strength tests. For high-traffic floor areas, abrasive hardness testing should be performed before making a final selection.

Granites, historically, have been favored for exterior use. Their composition makes them both resistant and stable and their surfaces will hold a high polish indefinitely. As a rule, weaker stones require greater, and more costly, reinforcement and, therefore, are not as economical.

Portions of the limestone exterior of the Pentagon had to be reinstalled following the terrorist attack of September 11, 2001.

Granite and limestone plant vessels are part of the streetscape design at the Minneapolis City Center.

Nearly any stone may be used for interior applications, typically in a $^{3}/_{4}$-in. thickness. However, in areas like fountains or showers, the effects of water must be taken into account. The installation is more critical than the stone engineering qualities for water-based applications. The installation method is the key to success. Stones must be able to resist frequent or continuous water flow, and in the case of showers, hot steam. Steam is a catalyst that can permanently change the color of some stones. Many stones with iron oxide react to steam and can "bleed," causing red streaks. Steam can permanently change the elements in the stone and make it do various things. The best results are obtained with a dense, resistant stone, like granite or compact marble, with a low absorption coefficient. The action of water on polished marble may cause surface dulling over time.

Stone Testing

"Most architects don't have much exposure to the technical side of the stone industry," says Booms. "A great reference tool is the 'Dimension Stone Design Manual,' published by the Marble Institute of America."

The 226-page manual includes an extensive introduction to stone testing, including detailed descriptions of test categories, procedures, and specifications of ASTM International (formerly the American Society for Testing and Materials). It also offers detailed instruction for a broad range of installations, both horizontal and vertical, including curtain walls, countertops, and lavatory partitions; a guide to care and maintenance; and sample contract documents. A copy may be ordered from the association at www.marble-institute.com.

Historically, ASTM standards for stone have been limited, but the organization is in the midst of expanding testing, particularly with regard to travertine and serpentines. "Further testing," says Migliore, "will further ensure the suitability of stone for a broader range of installations. A more careful review of standards for various stone products will enable architects to use stone with increasing confidence. You can, in short, now specify stone and know that it will work."

ASTM conducts both wet and dry testing (compressive, flexural strength, and the modulus of rupture vary when wet). ASTM C 97 standards are based on tests of a stone's density, specific gravity, and water absorption. Compressive, flexural, and bending tests are conducted under other ASTM categories along with tests for abrasion resistance and slip resistance.

Testing evaluates the suitability of a specific stone for a particular application. Strength tests are needed to determine its resistance to crushing and bending. The density, or specific gravity, is needed to design a support system capable of carrying the weight of the stone. The amount of water the material will absorb will help determine the resistance of the stone to staining and freezing, and its slip resistance is important in flooring applications.

It should be noted that European test methods might vary from ASTM and give different results for the same stone. This is particularly true of tests for wear or abrasion.

"A lot of people think of stone as delicate or fragile," says Zinder. "Before joining Michael Graves, I designed a number of corrections facilities, and ended up using laminated layers of $^{1}/_{2}$-in. marble for shower partitions because, ultimately, it was the only material that inmates couldn't break apart. Plastic laminates were broken apart and used as weapons; stainless steel also proved vulnerable. Stone proved more durable and resistant to tampering than anything else out there." ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

CLICK FOR ADDITIONAL REQUIRED READING

As part of the required material for this CES section, you are required to read additional online material. To access the material online, go to **archrecord.construction.com/resources/conteduc**. To request a faxed copy, contact The Marble Institute of America at info@marble-institute.com.

LEARNING OBJECTIVES

- Gain a greater understanding of how to select natural stone.
- Learn some of the characteristics of various natural stone building materials.
- Have a sense of how to avoid some common problems when using natural stone.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 236. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: **1.** From 1994 through 2001, U.S. homeowners spent an average of how much per per year on kitchen and bath remodels?
A: **a.** $10 billion
b. $20 billion
c. $30 billion
d. $40 billion

Q: **2.** At 36,300 tons in October, 2002, which country was the leading monthly exporter of granite to the U.S?
A: **a.** Italy
b. Spain
c. Brazil
d. Mexico

Q: **3.** Which classification of natural stone includes granite, gabbros and basalt?
A: **a.** Igneous
b. Metamorphic
c. Sedimentary

Q: **4.** Which classification of natural stone includes marble, slate, quartzites and schist?
A: **a.** Igneous
b. Metamorphic
c. Sedimentary

Q: **5.** Which is a metamorphic rock resulting from the recrystalization of limestone caused by heat and pressure?
A: **a.** Marble
b. Granite
c. Sandstone
d. Onyx

Q: **6.** Green coloring in marble is caused by:
A: **a.** Iron oxides
b. Bituminous materials
c. Chlorite

Q: **7.** Which classification of marble contains no geologic blemishes or voids that require filling or patching?
A: **a.** Group A
b. Group B
c. Group C
d. Group D

Q: **8.** Which classification of marble commonly has geologic blemishes but is the largest and most colorful group of marbles?
A: **a.** Group A
b. Group B
c. Group C
d. Group D

Q: **9.** Which stone has historically been favored for exterior use since its composition makes it both stable and able to hold a high polish?
A: **a.** Granite
b. Marble
c. Slate

Q: **10.** Which stone finish is generally preferred for floors, stair treads, and thresholds?
A: **a.** Polished finish
b. Honed finish
c. Flamed (thermal) finish

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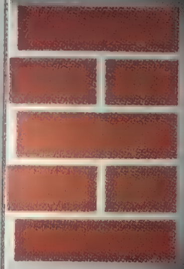

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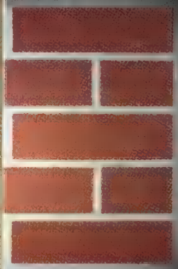

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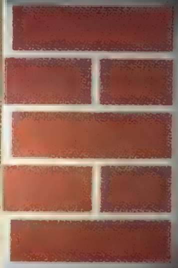

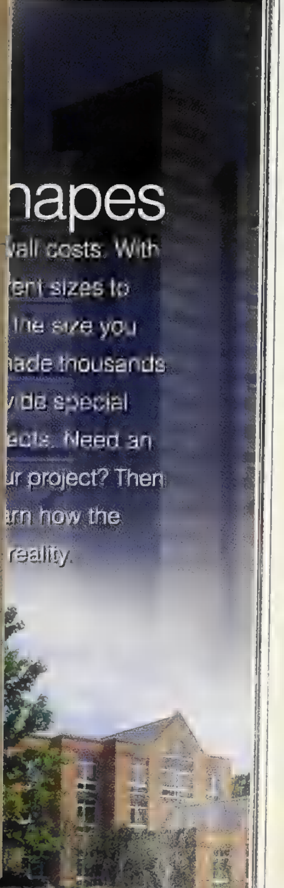

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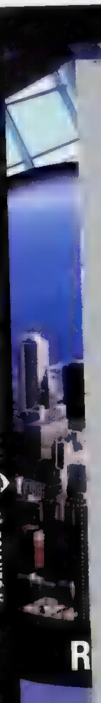

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Furniture and elements: contemporary living from bookcases to kitchens, from bedrooms to closet systems.

Three systems for the Day Zone: Wall to Wall, a bookcase system based on vertical and horizontal structures that allows for an endless range of design solutions libraries, entertainment centers or more sophisticated combinations. Sintesi, a "compositional" system constructed of cabinets, benches, shelves and [illegible] chests of drawers, flexible and unique. Sylo, characterised by a rigorous design and aluminium structure. An aesthetic variety of Day Zone wall systems twenty-four lacquered matt or glossy colours, four woods, six different glasses. A complete range of complements: tables, chairs, case goods and [illegible] Night Zone. The bed collection: eleven models, minimal through more equipped designs, a wide range of solutions for you to personalize. Poliform Securaline Wardrobe system represents a complete and versatile sophistication, offering storage solutions for throughout the home.

Kitchens. The Varenna collection: new models that offer a complete scope in kitchen design, the highest calibre of functional and aesthetic integration.

2/3 Wall to Wall bookcase structure in matt lacquer [illegible] and Bold doors in oak
4/5 Ares bed in oak with headboard in natural leather
6/7 Senzafine Atmosfera wardrobe in oak doors
8 Senzafine Walk-in closet Oak structure and equipment
10/11 Alea kitchen - Varenna oak and glossy white lacquer, [illegible] white top oak edge

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Landmarks in Brick

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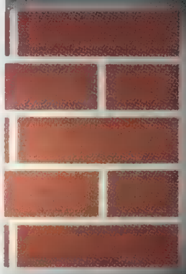

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Landmarks in Brick

Since 1885, The Belden Brick Company has been making brick in hundreds of colors, sizes and textures. Throughout these years, Belden has established and maintained a widely recognized reputation for the quality of its products.

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Colors

Belden Brick is available in a world of colors including soft whites and creams, golden buffs and dusty tans, delicate pinks and cinnamon reds, chocolate browns, pewter grays and coal blacks. With so many colors to choose from your options are truly endless. Here is a small sample of over 200 color ranges, 13 textures and 16 different sizes.

Sizes & Shapes

More sizes mean lower wall costs. With as many as sixteen different sizes to choose from Belden has the size you need. Plus, Belden has made thousands of special shapes to provide special details for individual projects. Need an "impossible" shape for your project? Then call Belden Brick and learn how the impossible can become reality.

Textures

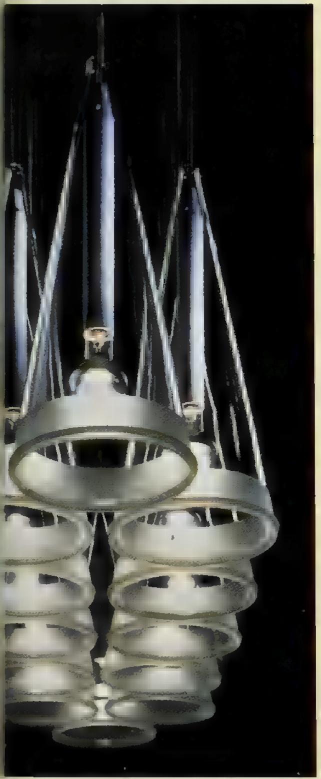
Belden Brick offers thirteen different textures that range from silky smooth finishes to rugged randomly textured styles. Each texture can make its own distinctive contribution to the visual impact you seek.

Achille Castiglioni
Addio al Maestro

ACHILLE CASTIGLIONI WILL BE REMEMBERED NOT ONLY AS A CONSUMMATE DESIGNER, BUT A GENTLEMAN, AS WELL. THOSE WHO KNEW HIM PAY TRIBUTE.

Products (this spread, clockwise from top left): Tea for Two tea service for Alessi, 2001; Mezzadro stool for Zanotta, with Pier Giacomo Castiglioni, 1957 (model of stool held by Castiglioni, opposite, top left); Fucsia suspension lamp for Flos, 1996; ACO4 fruit bowl and colander for Alessi, 1995; Joy shelves for Zanotta, 1989; Arco floor lamp for Flos, with Pier Giacomo Castiglioni, 1962; Leonardo adjustable-height table for Zanotta, 1940; Interior design for the *Italian Furnishings* exhibition in Tokyo, Japan, 1984, and recreated for the 1997 MoMA exhibition, *Achille Castiglioni: Design!*.

As thousands gather in Milan this month for the annual Salone del Mobile, premier showcase of the latest furniture and product design, the presence of one figure will be profoundly missed, the late Achille Castiglioni. A person to whom much of the credit can be given for putting Milan on the map as the capital of the design world, Castiglioni emerged from the post–World War II generation of innovative Italian designers to become one of the leading figures of 20th-century design. Whether working alone or with his brothers Livio and Pier Giacomo, Castiglioni's designs blended wit and function in objects that found their way into countless homes, even if his name did not. "Castiglioni had no consistent style," remarks Paola Antonelli, a former student of his who curated the first American retrospective of his work at the Museum of Modern Art, in New York City. "He was a conduit for the object." Although his passing last December was a great loss, he leaves behind an influential legacy. His impact on some of today's top product designers is reflected in the comments that follow. *Josephine Minutillo*



"One of the reasons I became a designer was Castiglioni's products. A few days after receiving my degree, Achille accepted me into his studio and spent hours showing me his collection of objects. The pictures I took were all out of focus. His mythical way of talking and the constant movement of his hands were too much for my Minox. He was the most human and unassuming designer I ever met." *—ALFREDO HÄBERLI*

"Achille's design process led to solutions that were very thoughtfully considered, always with a degree of poetic charm. In person, I was impressed with his humility and wit, the same traits found in his work."

—JEFFREY BERNETT

"Achille was there when I made my first sketches: an uncle who looked over my shoulder when I evaluated my prototypes, a father when I made my first steps in the world of design. I felt proud for the meaning he gave to his life, because it was inspiring, intelligent, and simple." *—MARCEL WANDERS*

"Achille was to Italians what the Eameses were to Americans. He designed the alphabet of modern living, and his work represents a slice of life, one that is understated and elegant, never vulgar."

—PIERO LISSONI

"Until last April, Achille never missed a show of mine, and his visit was always one of the things that made it all worthwhile." *—RON ARAD*

"The only time I saw Castiglioni was when he spoke at MoMA in 1997. He was surrounded on stage by his products, and I had the impression that it was not him but his products that I heard that day. His products communicate; they whisper promises of kindness and thoughtfulness in your ear." *—AYSE BIRSEL*

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Architect of Record: Kanalstein Danton Associates P.A., Cherry Hill, NJ
Structural Engineer: Michael A. Beach & Associates, Mt. Laurel, NJ
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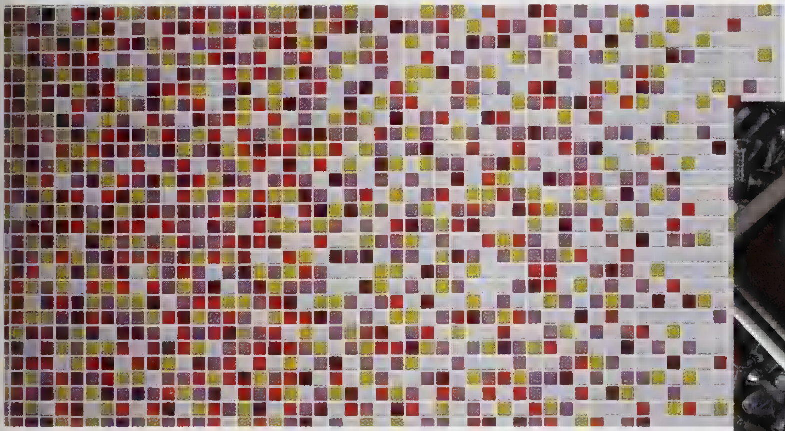
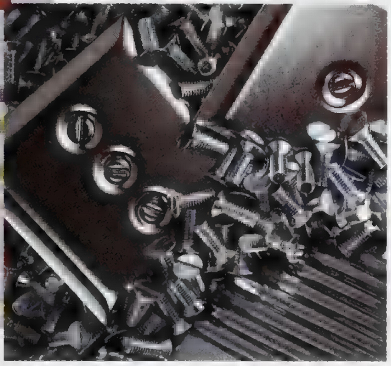
New Products

The application of state-of-the-art screening, glazing, molding, coloring, and other advanced techniques may help the **tile, stone, and concrete** products featured on these pages become the focus of many future projects. Whether inspired by comic books, cave drawings, classic decorative patterns, or just **the natural landscape** around us, there is no end to the possibilities of these versatile finishes. *Rita F. Catinella*





New Spanish tiles include Vidrepur's glass mosaics (left) and Deltaker's Metal series (below).

Spanish tile trends include toned-down metallics and contemporary mosaics

At Coverings 2003, the major U.S. tile and stone exhibition held last month in Orlando, the Pavilion of Spain showcased the latest technologies from the Spanish ceramic-tile industry designed for the U.S. market. Many of the collections offered updated textural effects created by new state-of-the-art glazing and screening techniques. Favorite inspirations were natural materials, fabrics, faux painting effects, and exotic wood finishes. Metallics, which have toned down considerably, are now used for subtle effects in decoratives—especially in silver and bronze. Deltaker's Metal is a 10" x 10" metallic-glazed porcelain-tile series. It is offered in matte, with a textured or smooth surface and a geometric, high-relief pattern. Another trend evident at the show was for mosaics with glasslike finishes to feature contemporary, spicy colors. Vidrepur's glass mosaics have soft, rounded edges and are produced from 100 percent recycled glass. The tiny mosaics are meshed in 12" x 12" sheets for easy installation. 305/446-4387. Tile of Spain Center, Trade Commission of Spain, Coral Gables, Fla. **CIRCLE 200**

Lightweight stone installs like brick

Boral Bricks has expanded its product offering beyond brick with the introduction of Liberty Classic Stone, a manufactured stone product that is lightweight (18 pounds per square foot, compared to approximately 45 pounds for quarried stone), installs like brick, and offers the look of natural stone with less expense. Unlike thin stone veneers, Boral's new molded stone is sized to a 3" thickness, the same as traditional brick, allowing it to be laid by masons in the same manner. A patented molding method replicates the shape and texture of stone, making the material ideal for both exterior and interior applications in residential or commercial projects. Boral's stone color is permanent, lasting even after years of weathering, and extends through the body of the stone. 800/5-BORAL-5. Boral Bricks, Atlanta. **CIRCLE 201**

Chiseled-edge and fern-leaf impressions personalize kitchen's concrete

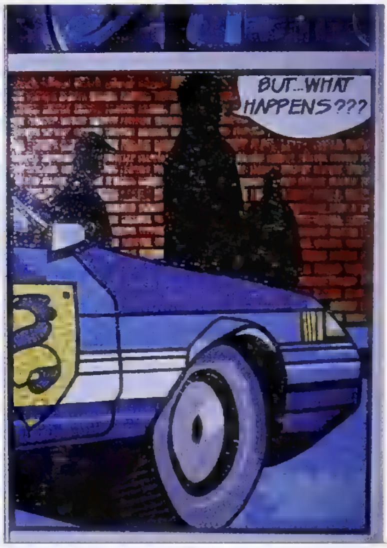
Concrete Canvas crafts architectural concrete pieces for home and business applications. The custom capabilities extend to products such as countertops, vanities, floors, sinks, furniture, mantles, and hearths. The company explores the natural properties of concrete in a variety of ways: It can take on a cast-bronze appearance, have a distressed finish, or be used in unusual applications such as a backsplash and window surround.

In a recent kitchen project by Susan Boone Jones of Fowler Interiors in Greenville, South Carolina, the homeowners wanted to find a material to mimic the look of chiseled limestone, which would have been expensive. Concrete Canvas was able to form an edge to give the look of chiseled limestone, which fits into the home's upscale rustic post-and-beam style. The thick edges give a massive feel to the counters, although the counter body remains small to reduce weight. The concrete features warm, earthy colors, including green, dark gray, and chocolate, which also accent the decor of the home. The backsplash, which extends up to the cabinets, is personalized with impressions of real leaves and ferns. 864/235-8007. Concrete Canvas, Greenville, S.C. **CIRCLE 202**

Concrete countertop mimics limestone.

New Products

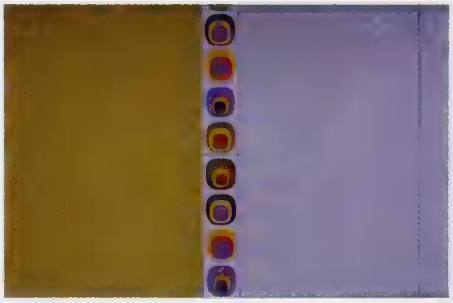
Last year marked the 20th installment of Cersaie, the international exhibition of ceramic tiles and bathroom furnishings held annually in Bologna, Italy. The tiles below show the range of products on display at the million-square-foot fair. *R.F.C.*



◄ Holy mosaics, Batman!

The Fumetto Mosaic Collections from SICIS offer an innovation for interiors with a contemporary art feeling. The mosaics bring the comic-book style of drawing to life with larger-than-life comic-strip panels that can be used individually or as part of a story to be read through the space. Featuring the Murano and Iridium collection of mosaics from SICIS, the sheets of tile are easy to apply on-site. New, complete comic-strip stories will be coming in the future from the company. 800/351-0038. Hastings Tile, Freeport, N.Y. **CIRCLE 203**

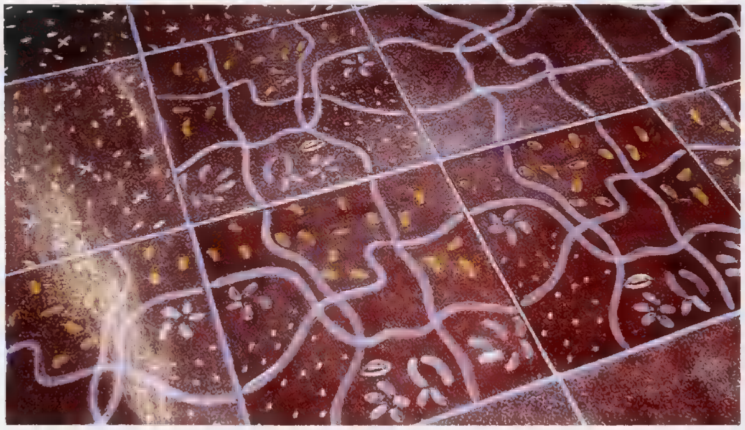
► Various tile styles

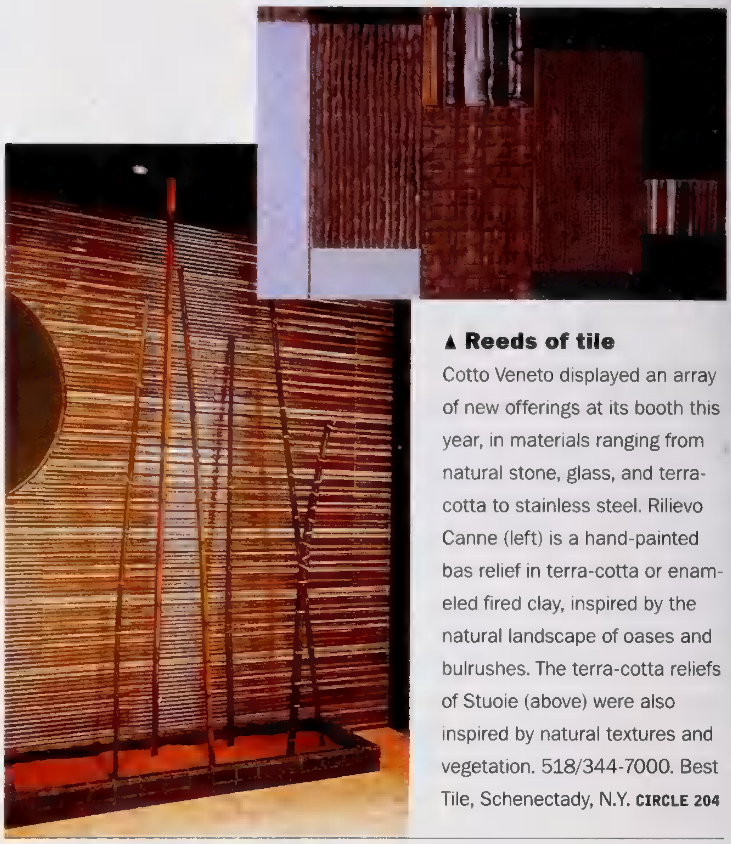


The Optical Series from Cerdomus Ceramiche was designed by Florentine architect and designer Simone Micheli. Suitable as a wall covering, the pop-arty tile comes in a range of bright colors in a single 25 cm x 40 cm (approximately 10" x 16") size. At the show, the company also introduced Pietra d'Assisi and Pietra di Angkor, porcelain tiles inspired by natural stone, and Mediterranea, a new line of tiles characterized by the colors of the sea, sun, and nature. 39/0546 652111. Cerdomus Ceramiche, Ravenna, Italy. **CIRCLE 205**

▼ Ceramic cave drawings

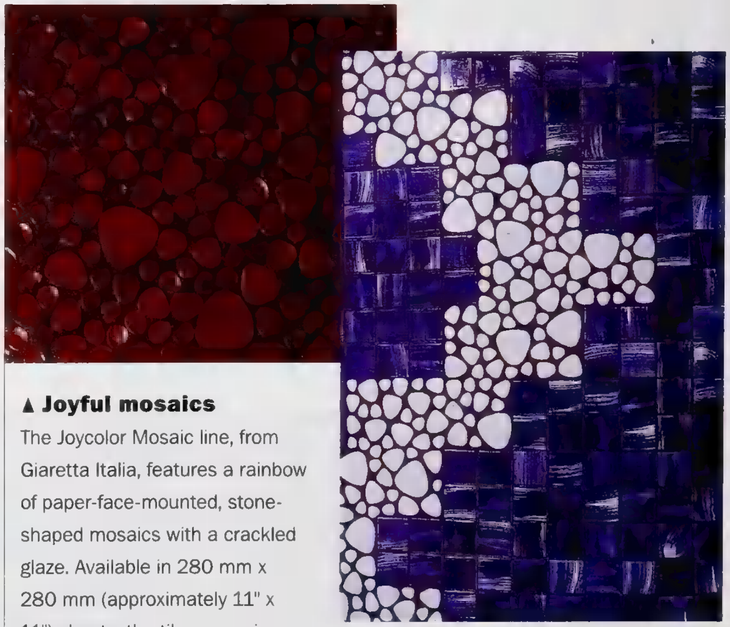
The Swahili Collection represents a return to motifs from traditional decoration. The products feature archaic symbolism of the four elements (Terra, Acqua, Aria, and Fuoco), patterns that allude to fossilized animals, symbols of tribal civilizations, and even patterns that depict an ancient interpretation of the creation of the world. 39/089 342800. Fornace Della Cava, Cava De' Tirreni, Italy. **CIRCLE 206**





▲ Reeds of tile

Cotto Veneto displayed an array of new offerings at its booth this year, in materials ranging from natural stone, glass, and terra-cotta to stainless steel. Rilievo Canne (left) is a hand-painted bas relief in terra-cotta or enameled fired clay, inspired by the natural landscape of oases and bulrushes. The terra-cotta reliefs of Stuoie (above) were also inspired by natural textures and vegetation. 518/344-7000. Best Tile, Schenectady, N.Y. **CIRCLE 204**



▲ Joyful mosaics

The Joycolor Mosaic line, from Giaretta Italia, features a rainbow of paper-face-mounted, stone-shaped mosaics with a crackled glaze. Available in 280 mm x 280 mm (approximately 11" x 11") sheets, the tiles come in creatively titled colors, including Icy Sand, Frozen Jade, Jungle Alga, Himalayan Sky, Blue Atoll, and Neptunian Heaven. The mosaics can be used in both residential and commercial projects. 39/0424 808341. Giaretta Italia, Pove del Grappa, Italy. **CIRCLE 207**

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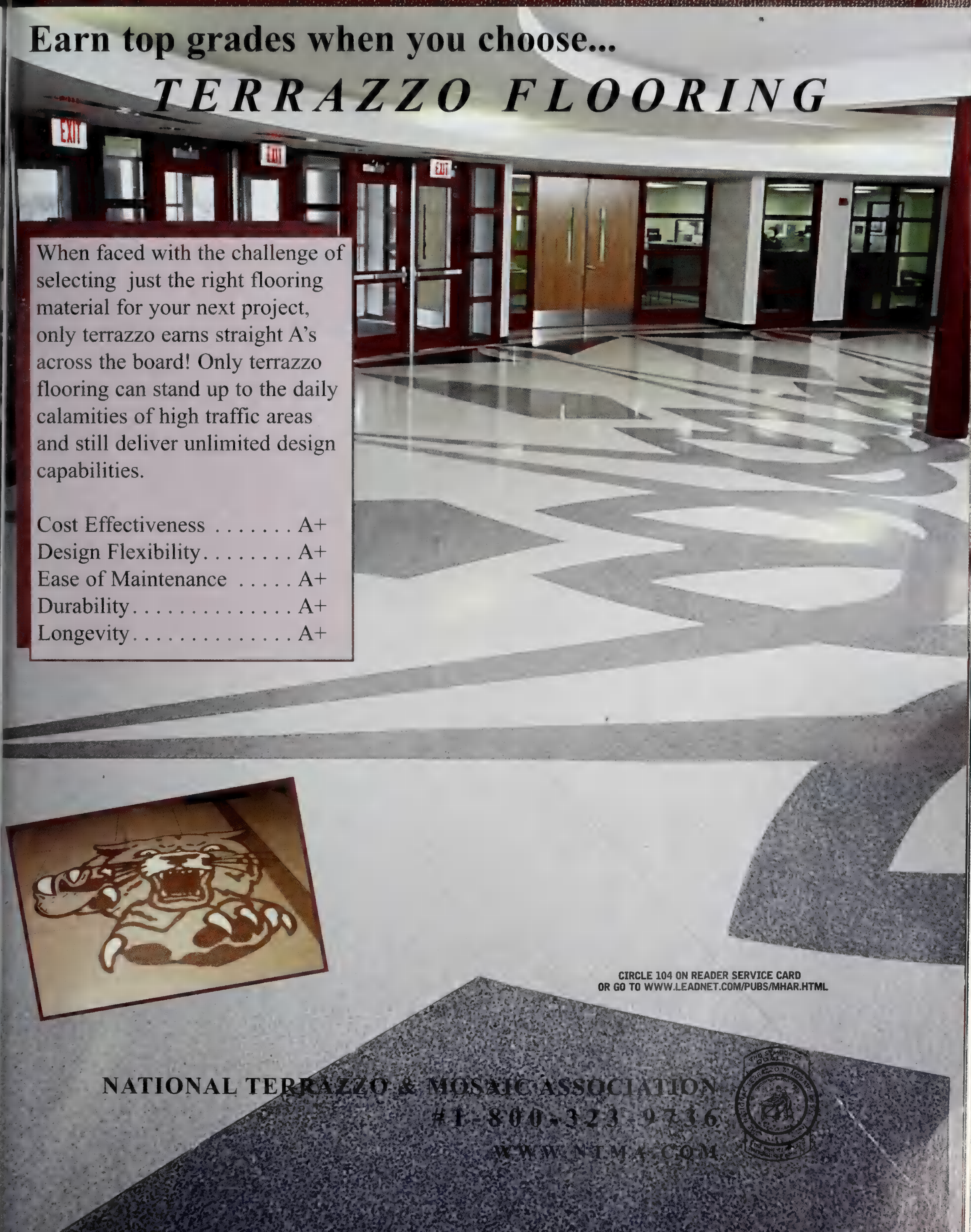

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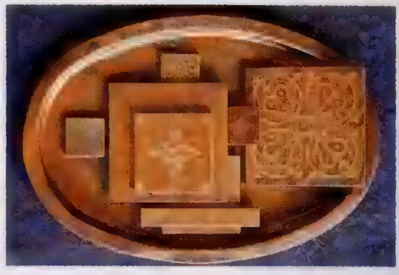
New Products

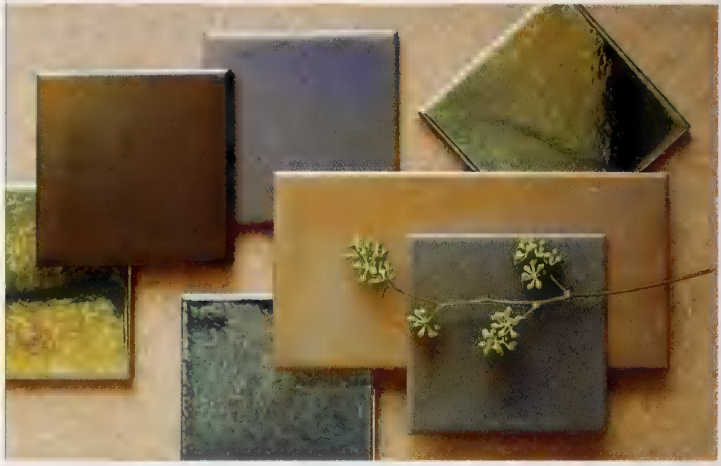
▲ Colorful accomplishment

The recently completed Cathedral of Our Lady of the Angels, in Los Angeles (RECORD, November 2002), is thought to be the largest colored-concrete building ever constructed (approximately 26,000 cubic yards of integrally colored concrete were used). Davis Colors supplied more than 100 tons of pigment used to tint the material for the project. Working closely with architect Rafael Moneo, Davis Colors developed a custom-colored pigment blend to create the "mission adobe" hue desired. Davis Colors celebrated the firm's 50th anniversary in 2002; today the firm claims to offer the widest spectrum of concrete shades available. 800/356-4848. Davis Colors, Los Angeles. **CIRCLE 208**



► Metallic-inspired tile

Patine (right), Walker Zanger's new collection of handmade, tarnished copper tiles, feature warm, aged hues and embossed decorative patterns reminiscent of French or English country houses. Elixir is a new collection of contemporary ceramic tile with metallic glazes (below). Elixir's six shades come in both glossy and matte finishes and are available in 4" x 4" field tiles, as well as trim. Elixir is recommended for interior vertical surfaces, including light commercial applications. 877/611-0199. Walker Zanger, Sylmar, Calif. **CIRCLE 209**



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Tile of Spain

The Mark of Excellence

Throughout history, artists like Spain's Joan Miró have added new dimensions to their unique works with the creative use of ceramic tile. Like Miró, the tile manufacturers of Spain are regarded as masters of their craft. For centuries, they have combined a history of craftsmanship and quality with forward-thinking technologies.

Today, Spain leads the world in the production of ceramic tile. It continues to set industry standards, developing the techniques and products of the future, from handmade to high-tech.

Along with the prestige of the finest European products, tile from Spain offers competitive pricing, high quality, and elegant designs. When it comes to floor and wallcovering options, look for the mark of excellence known the world over…

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Tile of Spain Center, 2655 Le Jeune Road
Suite 1114, Coral Gables, FL 33134
Phone: 305.446.4387; Fax: 305.446.2602
E-mail: buzon.oficial@miami.ofcomes.mcx.es
Website: www.tilespain.com.

Miró's tile mural, Mur du Soleil (1957), at the UNESCO Building in Paris, France.

TILE OF SPAIN

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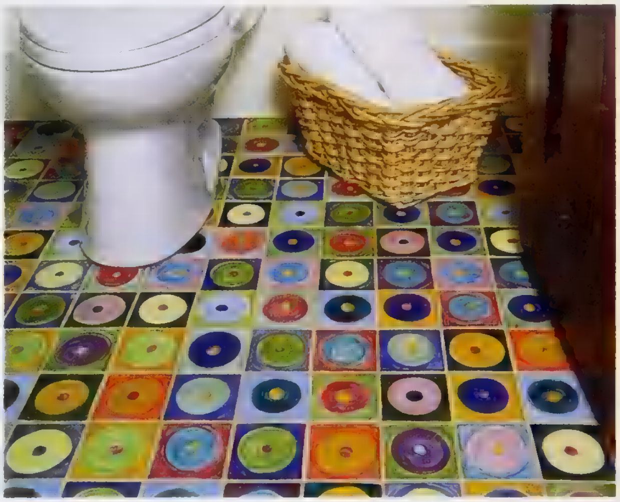
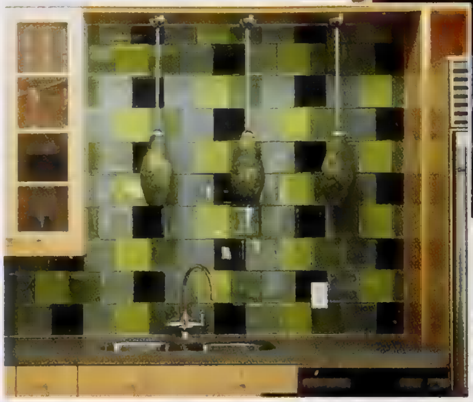
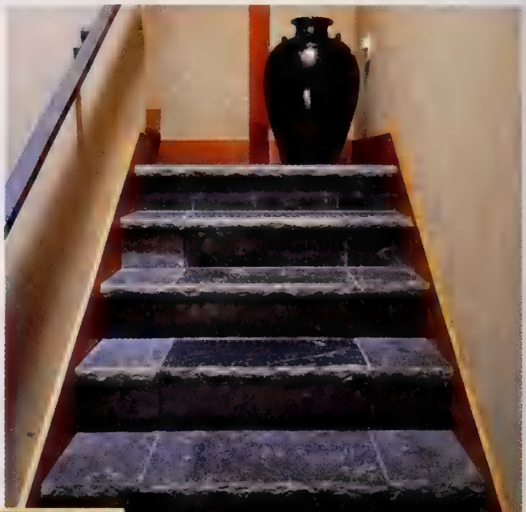
▾ Made by nature, found again by man

Authenticated Antique Belgian Java Limestone (right) joins the Ann Sacks antiquities program. The stone is a rare find because of the complexity and care required to reclaim large-scale stone from wealthy merchants' homes along the northeast coast of Java. Originally quarried in the mid 1800s in Belgium, the stone was used for many years as a ballast in old merchant sailing ships from Europe. Peppered with ancient fossils and burnished to a rich patina, the stone is offered in 20" and 24" squares. Also new from Ann Sacks are Dana's Sketchbook (left), a line of hand-painted ceramic tiles with a vibrant palette for highly artistic installations, and Pila Vetro glass tiles (center). 800/278-TILE. Ann Sacks, Portland, Ore. **CIRCLE 210**







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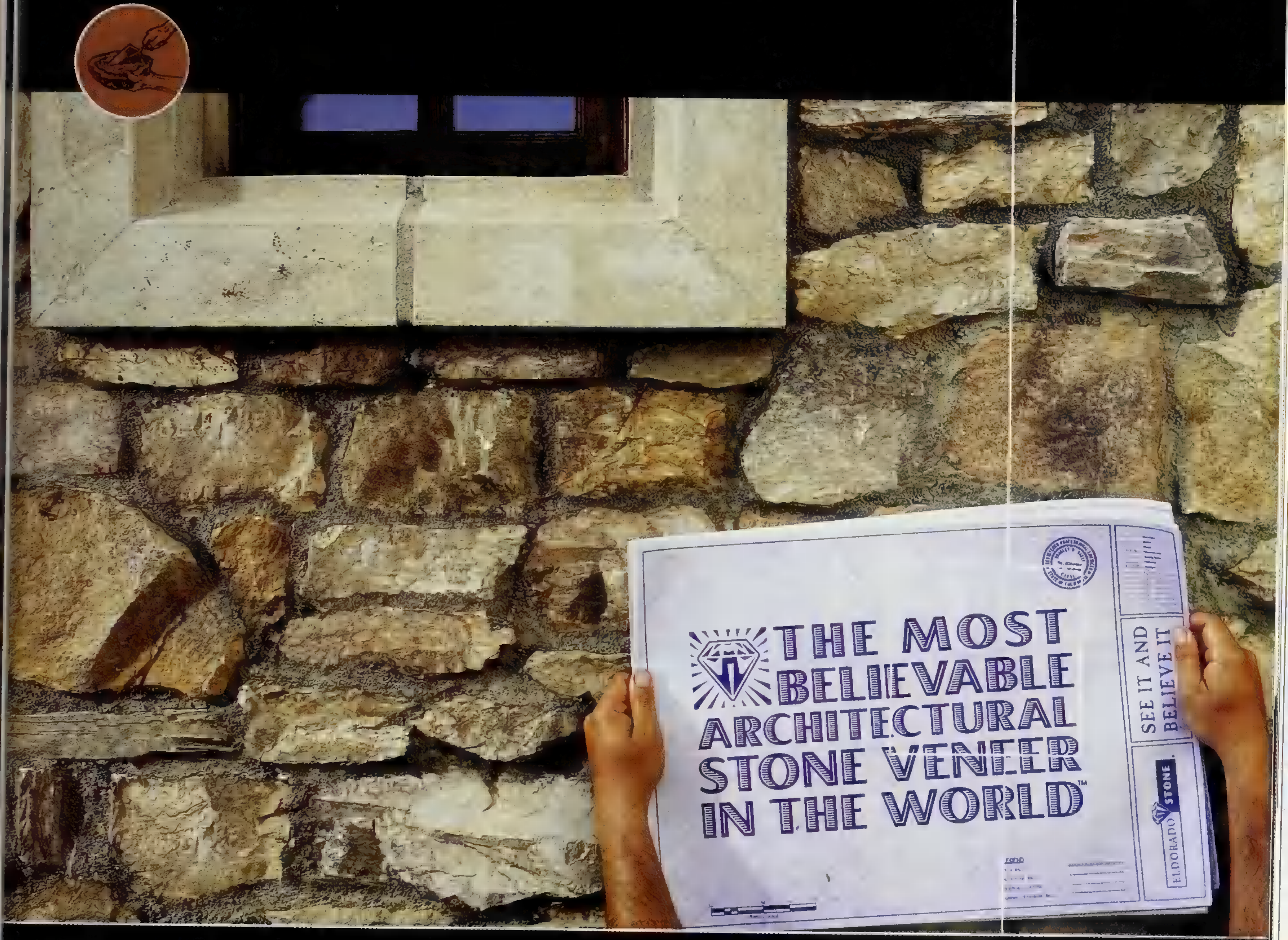
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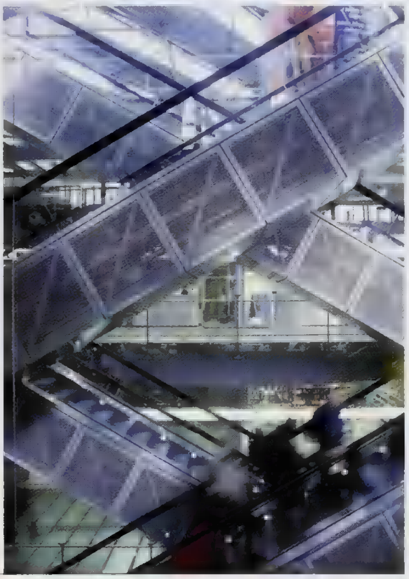
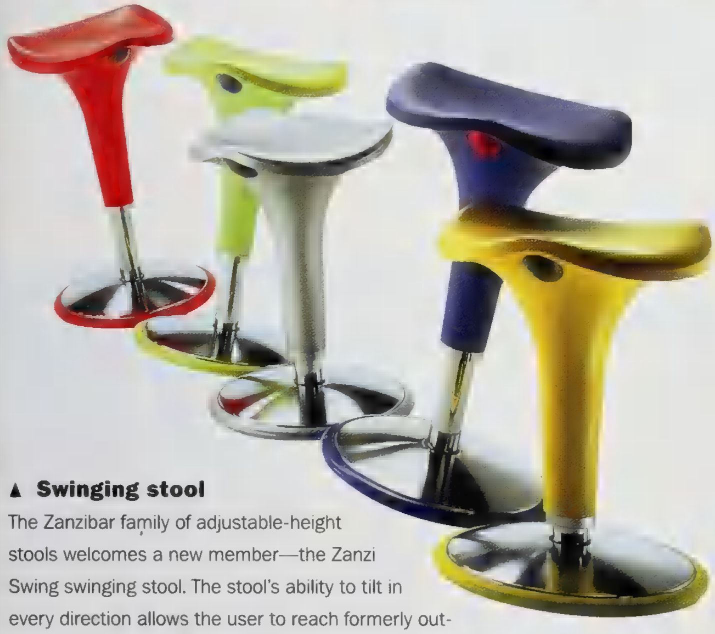
Product Briefs

► Undisruptive step



The KONE ECOMOD Complete Escalator Modernization solution offers a systematic way to replace working components of existing escalators with new technology while avoiding significant disruptions and construction costs that can be associated with conventional escalator replacement. The system comprises new modular components that fit inside the existing escalator truss and offers lower life-cycle costs, quiet operation, and lower energy consumption. 800/956-KONE. KONE, Moline, Ill. **CIRCLE 211**



▲ Swinging stool

The Zanzibar family of adjustable-height stools welcomes a new member—the Zanzi Swing swinging stool. The stool's ability to tilt in every direction allows the user to reach formerly out-of-reach objects while remaining comfortably seated, making it suitable for a modern office or residential setting. Available in nine colors, Zanzi Swing features an engineered polymer seat and a leg and base in chromed steel. 39/029 039 0013. Rexite, Cusago, Italy. **CIRCLE 213**

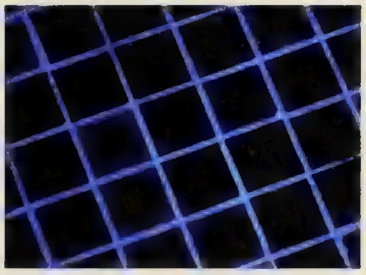
▶ Drier construction

To protect the sheathing during the construction of Waccamaw Memorial Hospital in Murrells Inlet, South Carolina, the architects of Dallas-based The Curtis Group chose to use Sto Guard, combining Sto Gold Fill flexible joint compound with Sto Gold Coat. Sto Guard fluid applied over the sheathing provided a seamless, bonded coating that was impervious to repeated exposure to water. 800/221-2397. Sto Corporation, Atlanta. **CIRCLE 214**

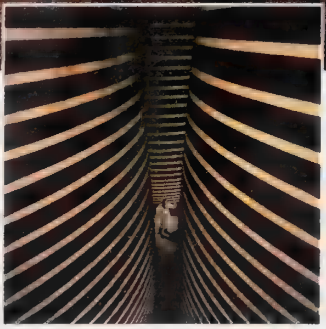
Product of the Month
SpectraLock Grout

While Laticrete SpectraLock Grout installs the same way as Portland cement grout, it performs like an epoxy grout. The grout can be used on smooth or textured ceramic tile or stone floors, walls, and counters in either wet or dry areas in commercial or residential projects. As its name implies, it is highly stain-resistant, and the manufacturer claims it won't fade, crack, or powder out. The epoxy requires no special tools to install, mixes easily by hand, spreads like cement, and can be cleaned up with cold water and a sponge.

Ready for foot traffic in 12 hours, SpectraLock is offered with a new color palette containing 40 colors, and five Dazzle combinations. The Dazzle line includes metallics, mother-of-pearl, and glow-in-the-dark (below) components that can be blended with Laticrete SpectraLock Grout to produce various effects. The glow-in-the-dark grout, for example, can help define wall and floor areas in complete darkness—and is particularly useful for those late-night trips to the bathroom or kitchen. 800/243-4788. Laticrete International, Bethany, Conn.



CIRCLE 212



▲ Stout flooring

When the Guinness Brewery in Dublin replaced its 27-foot-tall wood vats with easier-to-maintain metal vats, some of the wood vats were dismantled and stored while others were demolished. Mountain Lumber arranged to import more than 100,000 board feet of 100-year-old oak staves from the dismantled vats to mill into European Cooper's Oak flooring. The warm-colored oak flooring ranges in hues from golden brown to dark brown and is enhanced by accents from iron bands that tightly wrapped around the massive vats for decades. 800/555-2671. Mountain Lumber, Ruckerville, Va. **CIRCLE 215**

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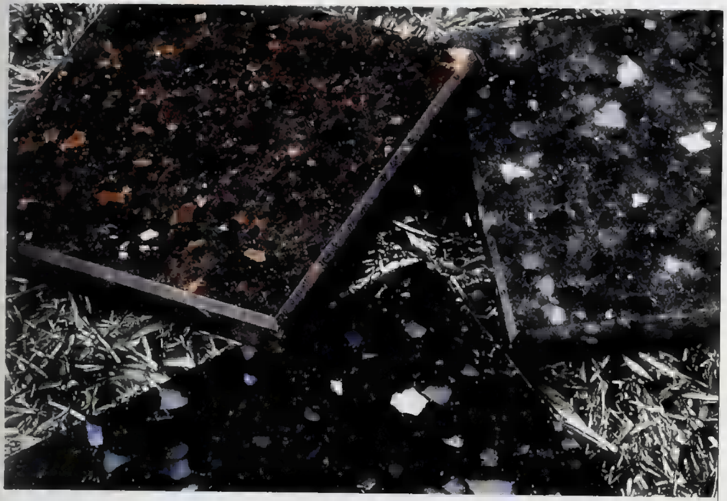
Product Briefs

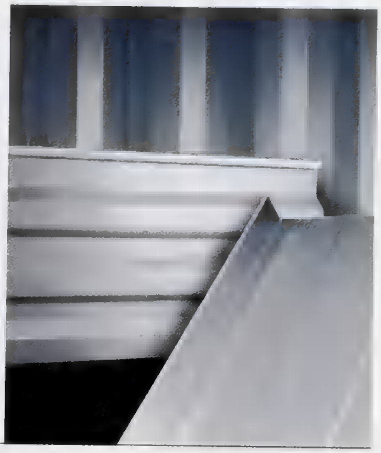


▲ "Counter fit" metals

The trend in interior finishes, ranging from contract fabrics to bathroom tiles, to add metallic and pearlescent effects has no sign of abating—and Avonite now has three new solid surfacing products to match: Copper Canyon, Argent, and Night Pearl. Copper Canyon and Argent use a new metallic particulate material of varying size to produce a shimmering effect that changes when viewed from different angles, while the Night Pearl offering features man-made particulates that mimic the iridescent reflections of abalone and mother-of-pearl. 800/428-6648. Avonite, Belen, N.Mex. **CIRCLE 231**

► Natural metallic finish

The Durallure Finish System, from Centria, offers the natural look of unpainted metal with a uniform, spangle-free finish. Durallure is a patented aluminum-zinc metallic-coating process with the long-term corrosion resistance of an aluminum-zinc alloy. A temporary clear coat provides protection against damage during installation. 800/759-7474. Centria Architectural Systems, Moon Township, Pa. **CIRCLE 232**



▼ Solar-powered air circulation

Providing up to 1,200 square feet of circulation coverage, the Solar Star solar-powered attic ventilator exchanges air at a rate of up to 800 cubic feet per minute to prevent attic heat from building up in the summer and eventually causing a buildup of moisture. The compact design, which includes three roof-mounting options, allows the unit to be installed anywhere air circulation is needed, including attics, sheds, and garages. 800/966-SOLA. Solatube, Vista, Calif. **CIRCLE 233**

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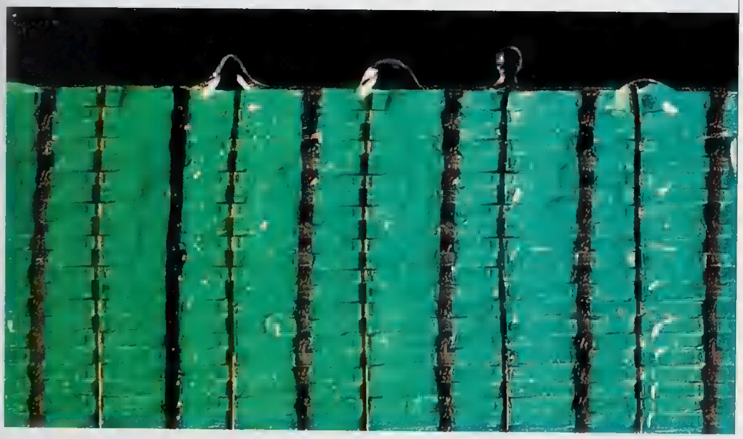
Product Briefs

International Builder's Show Review

▾ Water-draining housewrap

Pactiv Corporation introduces GreenGuard RainDrop housewrap featuring water-drainage channels that divert bulk water down the face of the wrap to the base of the exterior wall. Once the water has drained away and its source has abated, the drainage planes air dry. The housewrap may be used with most common exterior finishes and comes in 9' x 100' and 9' x 150' rolls. The drainage channels will not crush even when a hard-backed siding is fastened to the wall over the housewrap. 800/241-4402. Pactiv, Lake Forest, Ill. **CIRCLE 216**

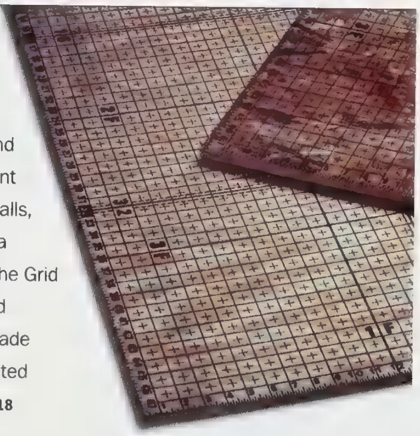


▴ Semiprecious stones

The Concetto line from Caesarstone features semiprecious stones in quartz surfaces that can be used for countertops, vanities, tabletops, and furniture designs. Intended for the luxury homeowner, Concetto is highly heat-, scratch-, and chip-resistant and is available in 1" thick, full-size slabs. The line uses flint, turquoise, carnelian, jasper, sodalite, and quartz to create an alternative surface to marble or granite. Founded in Israel in 1987, Ceasarstone is distributed in the U.S. by U.S. Quartz Products. 800/666-8201. U.S. Quartz Products, Sun Valley, Calif. **CIRCLE 217**

► Stay within the lines

The Grid Panel System, available in both OSB and plywood, features a surface-printed system of cutting and nailing lines that assist in the efficient installation of roof sheathing, side walls, subflooring, and siding. Available in a variety of thicknesses and grades, The Grid is produced in agency-certified-rated sheathing, sanded, and industrial-grade panels. 318/448-0405. Martco Limited Partnership, Alexandria, La. **CIRCLE 218**



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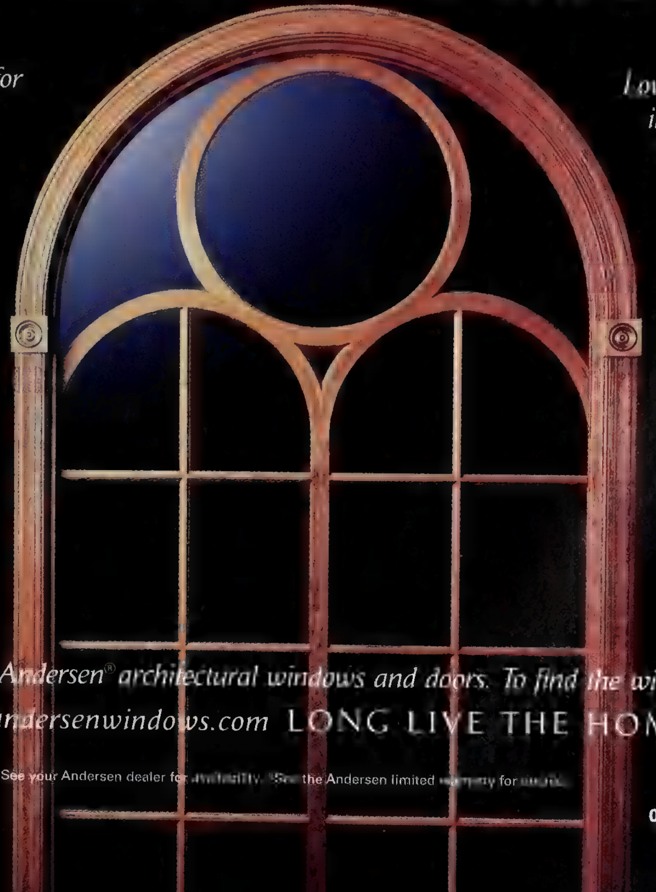

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Product Briefs

International Builder's Show Review

► And behind door number one ...

Bookcases that lead to hidden rooms are often associated with mystery novels and Hollywood sets. Now, there is the SPACE X DOORS system that replaces traditional closet doors with furniture quality bookshelves that function as doors. The bifold bookcase system will work in front of a closet in a home or office, or it can provide a more secure hiding place for guns, valuables, and other items in a vault or "safe room" behind the bookcase. There is also a hidden locking mechanism available, if necessary. The system can hold books and objects totaling 300 pounds of weight and can be opened without knocking objects off the shelf. Any door opening from 24" to 10' can be accommodated. The bookcases come standard in oak, maple, and cherry, and paint grade MDF, or they can be made to order in any other available hardwood or material. 800/262-9464. SPACE X DOORS, Centennial, Colo. **CIRCLE 219**

▼ Double hung with options

Weather Shield's redesigned double-hung tilt window features a sleek sash profile that keeps fasteners, nail heads, and hardware to a minimum. It offers a choice of seven anodized aluminum finishes and 55 standard and designer exterior colors. The window sashes tilt in for easy cleaning or removal, and Quadra Mitered, air-tight corners in nailing fin, frame, sash, and glazing enhance the window's efficiency. 800/477-6806. Weather Shield, Medford, Wis. **CIRCLE 220**

► Tough character

Pella's Impervia product line is manufactured from a five-layer Duracast fiberglass composite material that is claimed to be nine times stronger than vinyl and twice as strong as aluminum in tensile-strength tests. The windows and doors can withstand intense heat, moisture, and cold conditions. The line will be available in select southern and western markets in 2003, and in all other U.S. markets by late 2004. 888/84-PELLA. Pella, Iowa. **CIRCLE 221**

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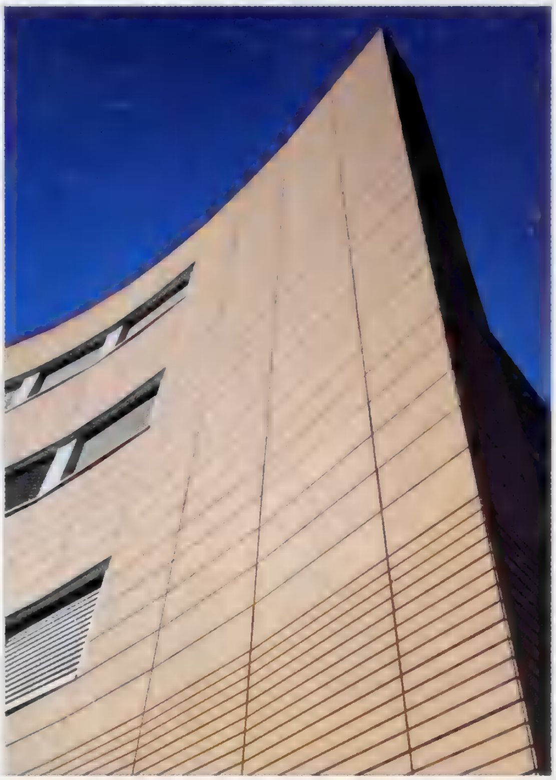

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Product Literature

Flexible linear lighting

Starfire offers a new brochure detailing the company's Xenflex flexible linear lighting system. The eight-page color brochure shows how Xenflex Xenon lamp technology, a low-voltage, flexible-mounting-strip design, creates a lighting system that matches the specifications of halogen lighting systems without any of the handling or usage restrictions. 800/443-8823. Starfire Lighting, Wood-Ridge, NJ.
CIRCLE 222

Government lighting

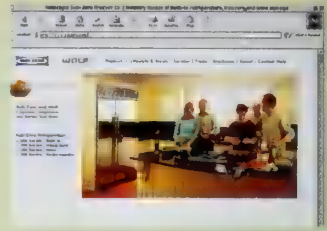
American Electric Lighting (AEL) has released the company's first catalog since becoming an Acuity Brands company. The 192-page catalog includes new additions to AEL's decorative Heritage Collection for municipal street lighting and the AVL vertical area lighter. 770/922-9000. Acuity Lighting Group, Conyers, Ga. **CIRCLE 223**

Oral privacy requirements

A new brochure produced by USG Interiors and Lencore Acoustics details how architects can meet the new Health Insurance Portability and Accountability Act of 1996 requirements to protect the privacy of health information conveyed orally. The brochure includes information about the requirements, explains how sound can be measured and controlled, and describes a two-part solution to meet the new standards. 800/USG-4YOU. USG Interiors, Chicago. **CIRCLE 224**

NEW SITES FOR CYBERSURFING

Co-branded site for refrigeration and cooking appliances **www.subzero.com** or **www.wolfappliance.com**



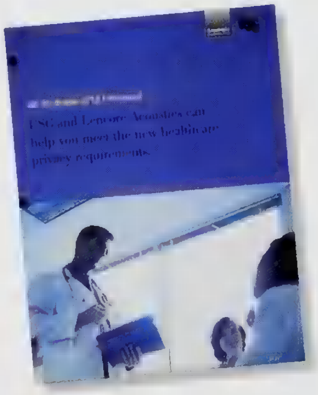
Interactive site shows versatility of concrete in residential construction **www.concretelifestyles.com**

Site for flooring, erosion-control, and storm-water-management products **www.sind.com**

New interior and exterior lighting site **www.georgialighting.com**

Ceiling portfolio

The new *2003 Armstrong Ceiling Systems* catalog showcases the entire ceiling and suspension system portfolio in one comprehensive specification reference tool. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. **CIRCLE 225**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Product Literature

New door expressions

Marshfield DoorSystems offers a free brochure on the Expressions del Sol factory-installed glazing collection for its interior wood doors. The doors feature glass openings factory glazed from a wide assortment of available glass from Firelite, Pilkington, Vanceva, and Visual Impact Technologies. 800/869-3667, ext. 2200. Marshfield DoorSystems, Marshfield, Wis. **CIRCLE 226**

Impact-protection catalog

Musson has released a new catalog featuring the latest products in impact wall protection. They include flat wall guards in three heights for high-traffic areas; ADA-compliant handrails in three different profiles (sculpted, flat, and cylindrical); and surface-mounted corner guards in three styles. 800/321-2381. Musson Rubber Company, Akron, Ohio. **CIRCLE 227**

Protection collections

A new 28-page catalog introduces Pawling Corporation's 2003 PRO•TEK line of handrails, corner guards, and wall and door-frame protection products. In addition, Pawling publishes a full range of other catalogs for its architectural products, including rigid vinyl wall coverings, entrance matting and gratings, athletic flooring, and parking and safety accessories. 800/431-3456. Pawling Corporation, Wassaic, N.Y. **CIRCLE 228**

Wood door options

Simpson Door Company introduces its new *Doors of Lifetime* catalog, a comprehensive guide to the company's collection of exterior and interior wood doors. The 96-page catalog showcases Simpson's complete product line in a range of wood and glass options and illustrates the company's custom capabilities. 800/952-4057. Simpson Door Company, McCleary, Wash. **CIRCLE 229**

Certified lumber report

A special report examining the growing demand for architectural wood doors manufactured from certified lumber is now available from VT Industries. The eight-page report, titled *Going Green*, provides an authoritative look at the technology and procedures required to deliver architectural wood doors that meet Forest Stewardship Council guidelines for certified lumber. 800/827-1615. VT Industries, Holstein, Iowa. **CIRCLE 230**

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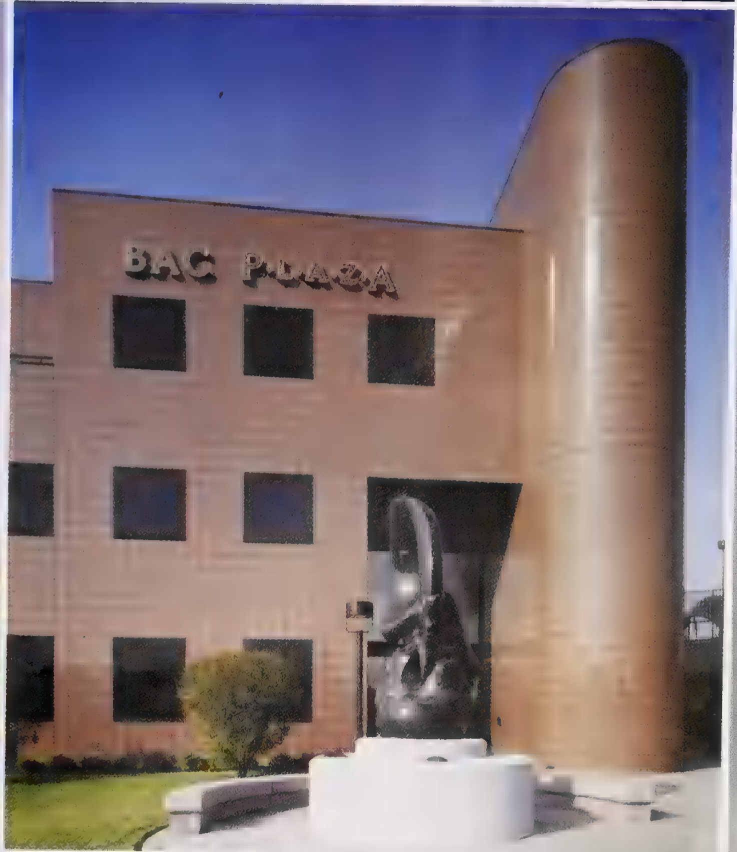

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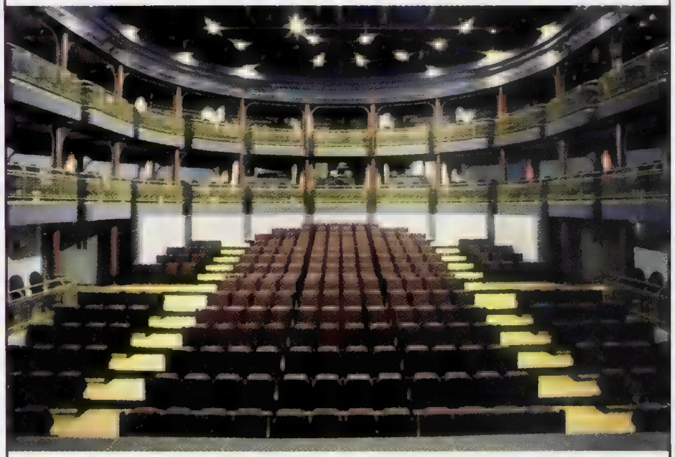

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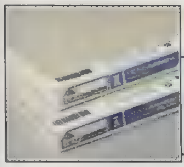

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
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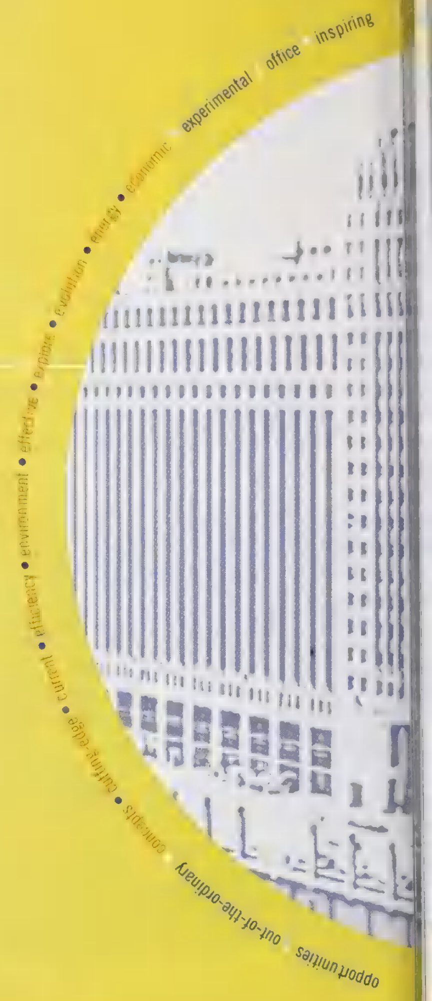
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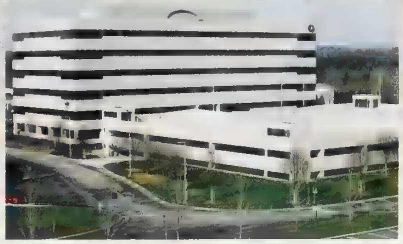

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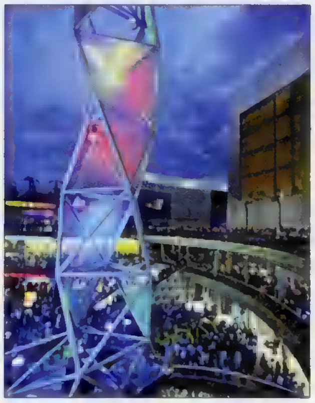

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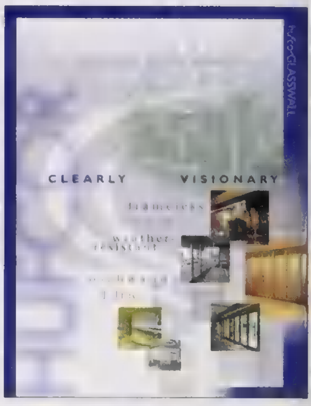

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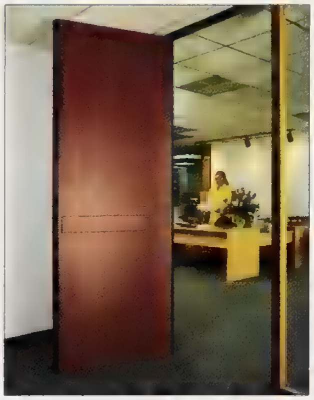

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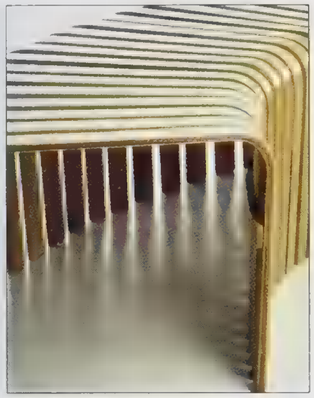

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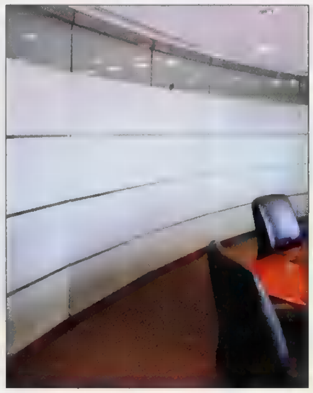

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Concrete Waterproofing by Crystallization

Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures. Call toll free 1-800-961-4477 or visit our web site at www.xypex.com.

Xypex Chemical Co.

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Extruded Aluminum Shelves

Rakks aluminum shelves feature an attractive low-profile design that exceeds the strength and stiffness of 3/4" plywood. Stocked in clear anodized aluminum, and available in custom finishes, these shelves look great with Rakks shelving hardware. The system can accommodate 4, 6, 8, 10, and 12-inch shelf depths in lengths up to 12 feet. www.rakks.com 800.826.6006

Rangine Corp. / RAKKS

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Unique Lifestyle Panoramic Door

To fit rough openings; From 37" by 84"; Double sash Doors; From 48" to 96"; With radii of 24"; Increasing by 6"; Increments up to 48"; US patent pending. For introductory offer information at: www.the99yeardoor.com

Panoramic Doors

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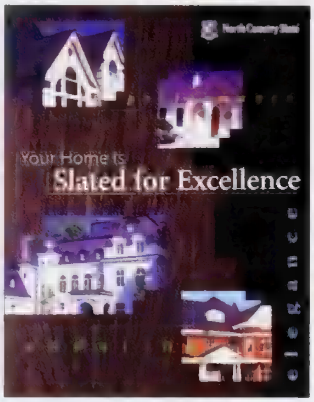
North Country Slate



North Country Slate offers a new brochure explaining the design and performance advantages of their remarkable roofing material to your residential customers. In six glossy pages, "Slated for Excellence" presents all the features and benefits to your client, the homeowner. Make sure you have this brochure on hand for your next discussion on slate roofing. For more information, call 800-975-2835, email us at info@ncslate.com or visit: www.northcountryslate.com.

North Country Slate

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IAC's Noise-Lock® Doors

IAC acoustic door systems have the industry's highest STC ratings. Noise-Lock® doors are fire-rated and available in a variety of finishes. As fully assembled systems, IAC doors are factory guaranteed to specified acoustic performance. Available as bi- and tri-fold and with vision glass. Applications: home theatres, offices, studios, control rooms, conference halls, and auditoria. (718) 931-8000 / email: info@industrialacoustics.com.

Industrial Acoustics Co.

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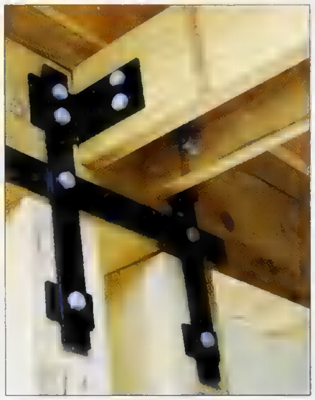
Brackets, Plates and Gussets



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Laser Precision Cutting

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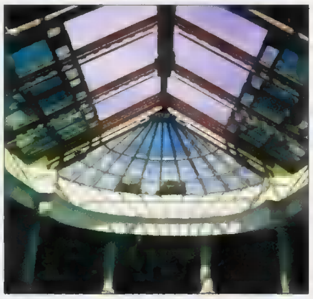
Retractable Roof Enclosures & Skylights



Custom designed retractable roof panels and operable skylights create year-round settings. At the touch of a button, motorized panels retract to open 50% of the roof area, letting in sunshine and fresh air. Maintenance-free thermally broken aluminum framing. Enclosures ideal for restaurants, patios, pools and atriums. For more information, call 800-267-4877, Email: openaire@openaire.com or visit www.openaire.com

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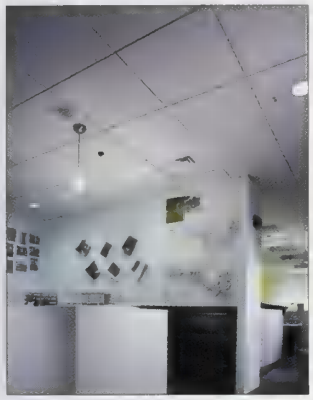
tracey_hall@McGraw-Hill.com

MANUFACTURERS' SPOTLIGHT

The Precision Square



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Columns, pillars, pilasters and posts available in wood, PolyStone™ and fiberglass. Interior, exterior. Variety of sizes and styles. Competitive prices. Job-site delivery. Worldwide shipping. Our award-winning Idea Book features an exciting collection of column projects. Includes Columns Product Portfolio, $20. Columns Product Portfolio $5 (credited to first order). Free brochure. 800.486.2118, Fax 910.763.3191

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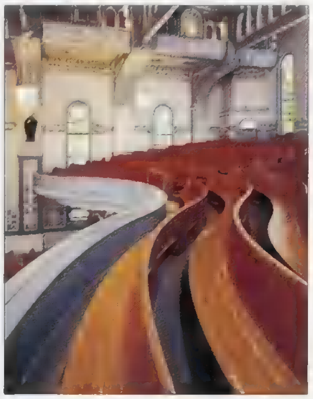
The Radius Curved Church Pew



Curved pews are "Round For A Reason" and are designed and manufactured by New Holland Church Furniture. Curved pews are designed for maximum seating, curved for efficient use of space, designed to enhance worship, created for community uniting the family of God. New Holland Church Furniture is a certified member of the Architectural Woodwork Institute (AWI) so you can be assured of the very highest quality. For information, call 800-220-1465.

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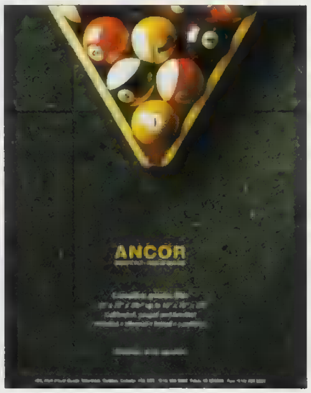
Ancor Granite Tile



Ancor produces over fifty No. American and Imported granites in a full range of colors and finishes for residential, commercial and institutional use. Standard format is 12 x 12 x 3/8"; other sizes up to 18 x 18 x 1/2" available. Honed finish tile is particularly suitable for high traffic commercial areas, 435 Port Royal West, Montreal, Quebec, H3L2C3, Canada. Ph: 514-385-9366, Fax: 514-382-3533.

Ancor Granite

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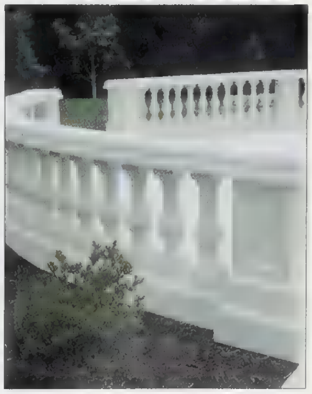
Balustrades and Columns



Beautifully hand crafted from cast stone, polymer marble composite, synthetic stone or polyurethane, our low maintenance balustrade systems are engineered to reduce weight yet maintain their substantial feel. Balustrade systems are available in radius designs and can meet any code requirement or project application. Also available are columns in fiberglass, poly/marble composite, GFRC and wood. 800-963-3060, www.meltonclassics.com.

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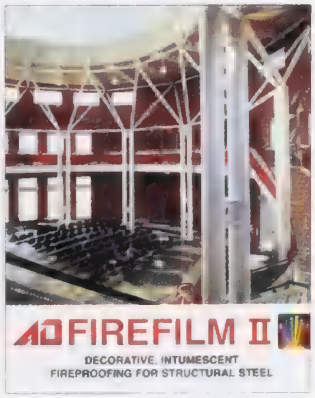

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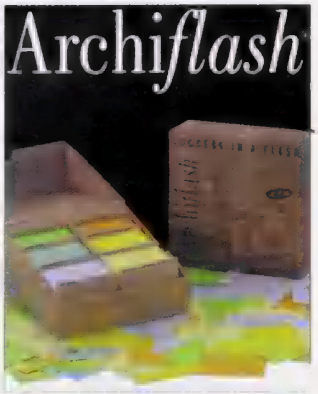

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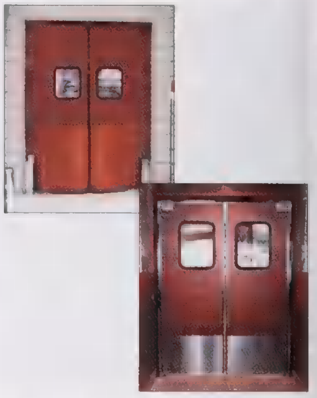
Eliason Easy Swing Double Action Doors



Eliason has compiled a new 2003 Easy Swing Doors price spec catalog. As the original supplier, only Eliason can furnish the quality workmanship and service you have expected over the years. Send for your free catalog today. Doors are sold direct and the price catalog will be sent at no charge. Call Toll Free 1-800-828-3655. Fax: 1-800-828-3577. Email. doors@eliasoncorp.com or doors@eliasonwest.com. Web: www.eliasoncorp.com.

Eliason Corporation

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Three-Sided Fireplace for Unlimited Installations

Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.

Heat-N-Glo

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ECOsurfaces® Flooring

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FAAC Introduces New Slider

FAAC is the world's largest specialized manufacturer of operators for swing, slide and barrier gate systems. The new Model 885 is a powerful chain-driven slider designed for residential and commercial applications. The 885 is UL 325 compliant and offers continuous duty operation, "soft stop" on opening and closing and master slave capabilities. Call 1-800-221-8278 for a brochure or visit www.faacusa.com.

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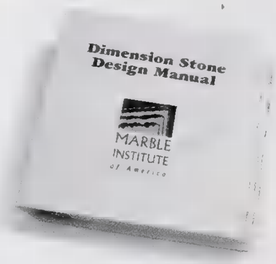
Dimension Stone Design Manual



Published by the Marble Institute of America, the Manual is the authoritative reference on natural stone design and construction. Technical data on granite, marble, limestone, quartz-based stone, and slate; guidelines and typical detailing for horizontal and vertical surfaces, wet areas, furniture, countertops; recommended exterior and interior stone maintenance; glossary of terms. $70 MIA members; $90 AIA members; $150 non-members. 440-250-9222. www.marble-institute.com.

Marble Institute of America

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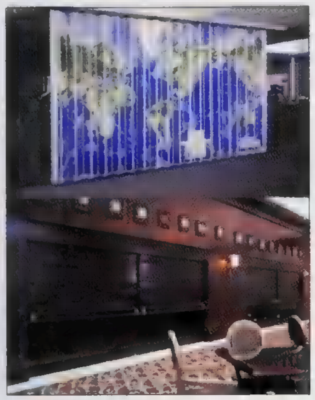
Designed for Offices



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International Architectural Ceiling Tiles Inc. (INTERACT) creates a new cost effective generation of advanced technology, lightweight gypsum ceiling tiles, featuring: 2'x2' panels; less than 6.5 lbs; fit into existing 15/16" t-bar; fire and smoke retardant; moisture resistant and cleanable; drills and cuts easily. INTERACT ceiling tiles encompass a wide range of acoustical properties making them economically suitable for any application. www.interactceilings.com

INTERACT

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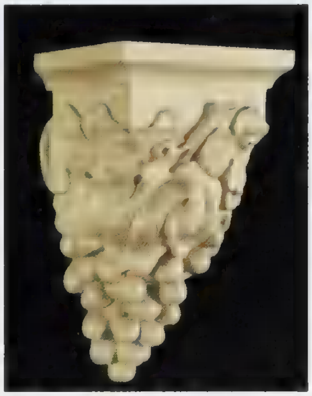
Architectural Wood Carvings



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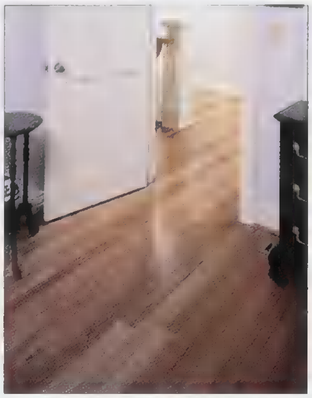

Grown on certified plantations in Brazil, Weyerhaeuser's Lyptus® is environmentally friendly and sustainable. Lyptus® features a grain similar to Mahogany with a Cherry tone. It is near the top on the hardness scale scoring higher than Maple, Northern and Southern Red Oak. Lyptus® is used to manufacture furniture, flooring and for millwork. For more information, call 1-877-235-6873 or visit www.weyerhaeuser.com/wbm.

Weyerhaeuser

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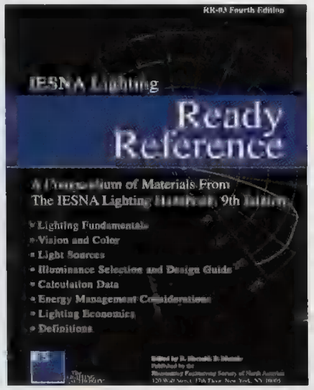
IESNA Lighting



RR-03 Fourth Edition

IESNA Lighting
Ready Reference

A Compendium of Materials From
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- Vision and Color
- Light Sources
- Illuminance Selection and Design Guide
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- Lighting Economics
- Definitions

Small enough to carry for on-the job use, the *IESNA Lighting Ready Reference* (RR-03) is a compendium of the most often used materials in the *IESNA Lighting Handbook*, 9th edition, acknowledged throughout the industry as the most authoritative source for lighting information. The Ready Reference offers selected material from the *IESNA Lighting Handbook* in a portable format, & is a valuable tool for designers, architects, engineers & manufacturers. www.iesna.org

IESNA

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Alucobond® Material Brochure

Totally new Alucobond® Material brochure in dramatic new format illustrates the use of Alucobond Material in a variety of innovative applications and colors. Alucobond Material is the original ACM (aluminum composite material) and has been used on more than 50,000 buildings worldwide. Alucobond Material is always the affordable solution. For more information, call 800-382-6445 or visit www.alucobond.com.

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System M2

As innovators of washroom plumbing design, Neo-Metro Collection's System M2 is the solution that merges creative design with ease of installation. Only one plumbing connection is required for multiple basin arrangements, in a variety of modern basin styles and options. System M2 is the ideal washing system for modern office spaces, restaurants and hospitality venues. Call (800) 591 -9050 or visit www.neo-metro.com.

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Eventscape

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Waupaca Elevator

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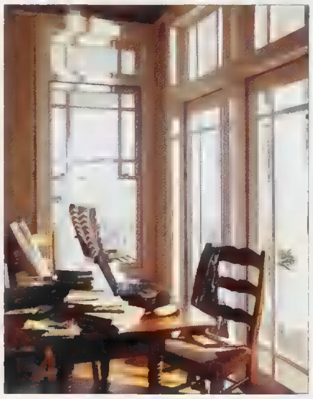
Weather Shield Windows & Doors



As the flagship line for upscale homes, Weather Shield is the company's most comprehensive line of windows and doors. Weather Shield windows and doors feature wood interiors and are available with either an extruded aluminum exterior or a wood brick mould exterior. Windows and doors come in ten long lasting exterior finishes, and are available in any of seven different wood species from the Custom Wood Interiors Collection.™

Weather Shield Windows & Doors

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New Craftsman Shingle Panels from Shakertown

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Pratt & Larson Ceramics

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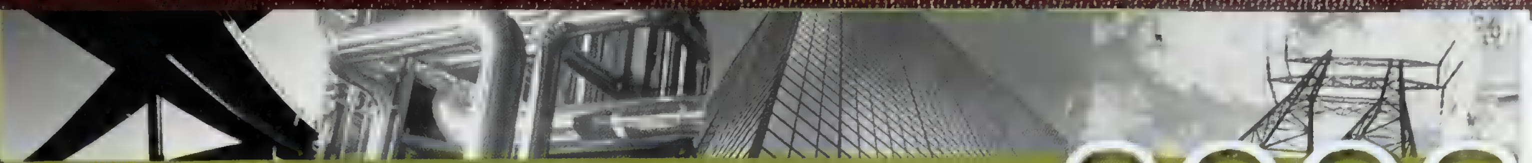

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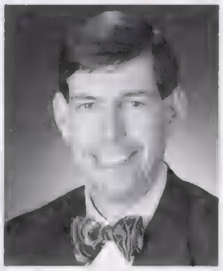
California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FOR VICE PRESIDENT (elect three)

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North Carolina

Jerome Filer, FAIA
Florida

RK Stewart, FAIA
California

David H. Watkins, FAIA
Texas

The AIA Board of Directors is sponsoring an amendment to the AIA Bylaws scheduled for consideration by the delegates at the annual business meeting in San Diego, May 10, 10:30 a.m.–12:00 noon. Bylaws amendments require the approval of a two-thirds majority of all votes accredited to be cast at convention.

Bylaws Amendment 03-A

Subject: Authority for New Voting Methods at Corporate Meetings of the Institute

Background: Chapter 5 of the Institute's Bylaws governs annual and special corporate meetings of the Institute's membership. Section 5.27 provides for voice votes, standing votes, and roll call votes at such meetings.[1] This has the effect of precluding the use of other voting methods, including electronic voting, at Institute meetings.

This amendment, which is sponsored by the Board of Directors, would amend Sections 5.27 and 5.29 of the Bylaws to eliminate the use of standing votes and to redefine roll calls to permit the use of any method of voting (including electronic voting) approved by the Board of Directors.

Required Vote to Amend Bylaws: A Bylaws amendment on this subject requires the approval of a two-thirds majority of all votes accredited to be cast at convention. (*See* Section 9.011 of the Institute's Bylaws.)

Motion: The delegates assembled at the 2003 Annual Meeting amend the Institute's Bylaws as follows:

5.27 Voting Methods at Meetings of the Institute. The only methods of voting permitted at a meeting of the Institute are:

a) voice vote,

~~b) standing vote,~~

~~c)~~ b) roll call *(conducted manually or by any other method, including electronic voting, approved by the Board of Directors),* or

~~d)~~ c) secret ballot, if required by these Bylaws.

5.29 Recording of Votes.

5.291 Voice ~~and Standing~~ Votes. On all voice votes, ~~or standing votes~~ each delegate voting shall be presumed to cast one vote.

5.292 Proxy Votes at Convention. On voice ~~and standing~~ votes, proxy votes shall be presumed included in each delegate's single vote. On every roll call vote *or* secret ballot, delegates holding proxies shall record separate votes for their assigned chapter and the proxy chapter.

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[1] A fourth method of voting mentioned in Section 5.27 – a secret ballot – applies only where specifically required by the Bylaws. There is no such requirement as to most votes taken at meetings of the Institute.

AIA

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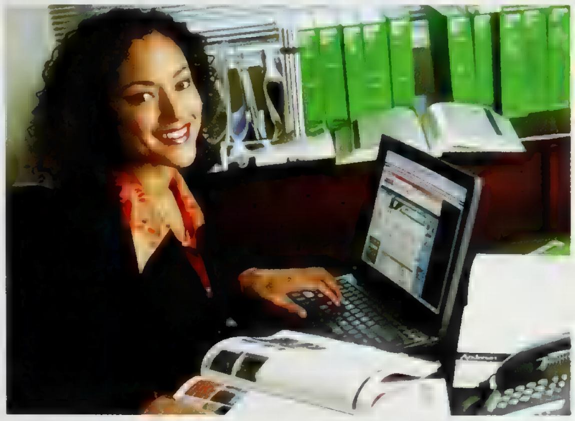

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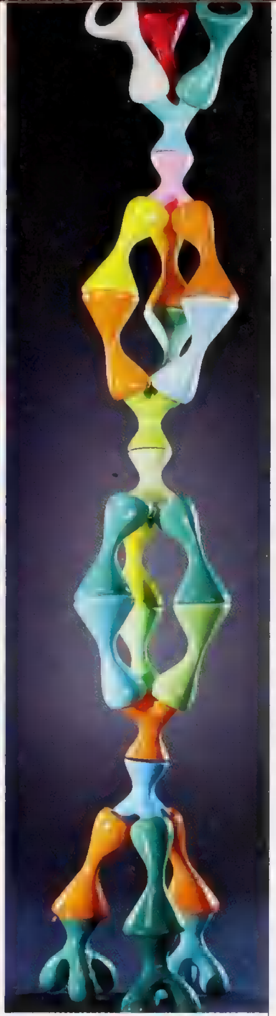

Profile

For architect Daniel R. Oakley, toys aren't just child's play

Interviewed by Deborah Snoonian, P.E.

Daniel R. Oakley was, in his words, "wonderful and stressed out" in February as he embarked on a European tour for his company, Oliblock. Three years ago, Oakley made the first set of Oliblocks (photo, above right) in his kitchen. Now you can buy them in several countries, and they've attracted such a following that product maker Umbra signed him up to design puzzles. Oakley studied architecture at the Rhode Island School of Design, then worked for Zaha Hadid for four years, introducing her to CAD and visualization technologies. He returned to his native California in 1994 to start his own firm.

Q: *How did you dream up the idea for Oliblocks?* I wanted to make something special for my best friend Tim Morgan's daughter, Emma. She's my godchild. I have friends who make sets and props for people like George Lucas in the film industry, and I'd seen how they make things like R2D2's feet out of plastic. I'd always wanted to try something like that myself.

Oliblocks actually began as prototype miniatures of a sand castle kit of modern shapes, things Emma could take to the beach. I made the miniatures in these abstract, organic shapes, and I designed them to interlock with themselves. I enjoyed experimenting with the miniatures so much that I just made more of them in different shapes. They evolved eventually into Oliblocks, with an interlocking connection at one end and a magnet at the other end.

Where does the name Oliblock come from? The O is taken from my last name, and the *li* comes from Emma's younger sister, Lilley. O-Emma just didn't sound right, even though I'd made the toys for her originally. One of my new products, the inflatable Lilleypads, are named after Lilley, too.

In the 1990s you won a number of awards for your computer designs. Are the shapes of Oliblocks influenced by that experience? Definitely. I wanted them to be fun and colorful and futuristic, sort of like the modern version of Legos. Although these days, it's funny, but I rarely use my computer. Only for e-mail.

What was your favorite toy as a kid? There was one toy that was basically a hot plate covered by a domelike device that held molds. You'd place these plastic squares onto the hot plate, and the squares would melt into the shape of the molds. I was always burning myself on the hot plate; I'm sure that's why it's off the market. It was a great little toy, though. I wish I still had it.

Do you miss being an architect? I don't consider myself to be out of architecture altogether. There's a lot of overlap between architecture and product design. People still ask me to do projects; I might design a small hotel and residence in Northern California, for instance. But I don't miss building permits, code compliance, budget constraints—those are no fun. When I design products, I feel much more free to be creative. I'm really happy with what I'm doing.

Portrait by Carter Dow; product photograph by David Janssen

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